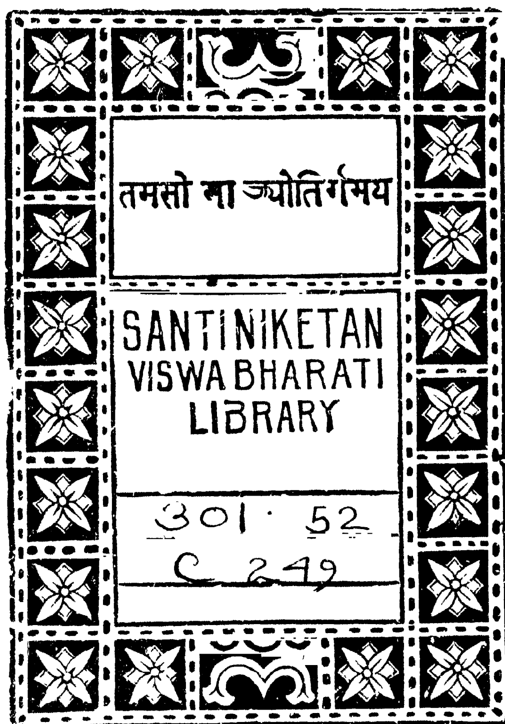
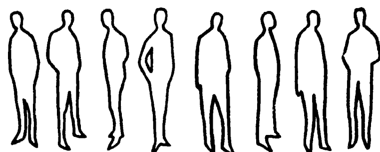


Group Dynamics



GROUP DYNAMICS

Research and Theory

SECOND EDITION

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Preface

The literature about groups goes back to the distant past. Careful research, however, has been known for only a few decades. Although man was slow in demanding that his working assumptions about the nature of group life be based upon objective evidence, his curiosity is no longer satisfied with speculation or the accumulated wisdom of personal experience. Today we demand facts. And, although all of us sometimes mistakenly take our untested prejudices to be facts, there is widespread recognition that a fact can be established only through careful use of objective methods of observation, measurement, and experimentation. The use of such methods to provide a dependable body of knowledge about groups has accelerated rapidly within recent years. Perhaps the most important reason for this development is the simultaneous acceptance of two propositions—that the health of democratic society is dependent upon the effectiveness of its component groups, and that the scientific method can be employed in the task of improving group life.

A democratic society derives its strength from the effective functioning of the multitude of groups which it contains. Its most valuable resources are the groups of people found in its homes, communities, schools, churches, business concerns, union halls, and various branches of government. Now, more than ever before, it is recognized that these units must perform their functions well if the larger system is to work successfully.

Awareness of the practical importance of something does not, however, lead automatically to its scientific investigation. The rise of research in group dynamics could occur only because people began to see that the scientfic method can be applied to these important phenomena. Only

after social scientists had made some progress in developing research techniques applicable to group life could support be mobilized for a systematic and empirical attack on the functioning of groups. Of critical importance was the development of techniques of observation for recording and classifying behavior and methods of interviewing which would reveal motivation and attitudes, the demonstration that group phenomena can be created experimentally in a laboratory, and the invention of action-research with its emphasis upon the possibility of conducting genuine experiments in natural groups.

The recognition that techniques such as these can provide dependable findings about critical social problems resulted, immediately after World War II, in a great increase in the financial resources and the number of competent investigators available for research on groups. This work was undertaken by persons trained in several different disciplines and under the auspices of universities and other organizations more directly concerned with the practical problems of group life. The conclusions and theoretical interpretation of this research were scattered throughout a variety of publications in several professional fields. By the early 1950's a great need had developed for a systematic summary of the results of these various investigations and for a handy collection of the more significant articles describing the methods and results of research on group dynamics.

The first edition of this book, published in 1953, was prepared in order to help meet these needs. When we decided to undertake this task, two alternative procedures presented themselves. We could try to write a systematic summary of the available research findings in a manner similar to the usual textbook, or we could compile a collection of the major publications in order to illustrate the variety of approaches, methods, and findings. The preparation of an integrative summary seemed to us to be premature. To achieve theoretical consistency, we should have had to omit important findings which did not then fit readily into a single theory and we should have had to present large segments of theory for which adequate empirical testing had not yet been provided. The second alternative seemed hardly better, however, for there was in fact a greater systematic relation among various research projects than would be evident from a mere stringing together of research articles. A middle course seemed best. We chose, therefore, a limited number of theoretically defined problems and presented the available literature in these areas. For each of these topics we prepared an introductory chapter designed to give a theoretical framework for relating the various articles to one another.

Since the publication of the first edition research on groups has continued at an accelerated pace. Although an accurate count has not been made, it seems safe to say that more empirical studies have been carried out since 1953 than in all the preceding years. In the short span of seven

years many new problems have been investigated, new techniques of research have been invented, and new theoretical formulations have been produced. A deeper understanding of the central problems of group dynamics and a firmer empirical basis for conclusions have also been achieved. Much of the work reported in the first edition has since been subjected to the test of replication or extension to new types of population and situation. The literature of group dynamics now contains a much larger number of monographs, books, and critical reviews of research and theory. It has become markedly more international, containing significant contributions produced by scholars in countries other than the United States.

In preparing this new edition we have attempted to create a volume which reflects the changes that have taken place and which contributes to the needs arising from this new situation. After much thought and consultation with people who made use of the first edition we concluded that the general structure of the book should be preserved. Although many new topics (e.g., intergroup relations, social perception, the interactions between group variables and personality, and social change) might have been added, it seemed best to preserve a concentration on a more limited number of topics which together constitute the core of group dynamics. It has been difficult to resist the temptation of scattering our shots. Within the original structure, however, considerable changes have been made. Eighteen articles not contained in the first edition have been added, and to make room for them eighteen have been omitted. In adding new articles we have chosen ones which, in our opinion, serve best as an introduction to a significant theoretical point of view or to an important line of empirical research and which combine with the others to round out a particular topic. The introductory chapters which we prepared for each section of the first edition have been brought up to date by extensive revision and expansion. The bibliographies have been enlarged so that ready reference can be made to the more important related publications. In each chapter we have tried to define the scientific nature of the problem and to point out ways in which research is beginning to add up to general principles. At the same time we have attempted to communicate some of the vitality of the field by stressing problems that need further study, by raising questions, and by suggesting hypotheses which may soon be tested. A reader who desires a brief overview of the field of group dynamics will discover that a consecutive reading of chapters 1, 2, 3, 9, 19, 25, and 34 is useful for this purpose.

The book is divided into six sections. The first contains two chapters, prepared for this volume, which place the field of group dynamics in historical and theoretical perspective. This section describes the intellectual and social origins of group dynamics and discusses the basic theoretical

and methodological issues encountered by those working in the field. The second section deals with the determinants and consequences of group cohesiveness. This is followed by a unit containing articles on the nature of group pressures and the operation of group standards. The fourth section is concerned with individual motives and the formation of group goals. In the following section the interrelated topics of leadership and group performance are considered. The final section deals with group structure, concentrating especially upon the topics of communication, power and status, and interpersonal attractions and repulsions. It should be mentioned that many of the articles could well be located in several different sections, since they deal with various phenomena simultaneously. Their present placement reflects our judgment of "best fit," but the reader may wish to consider the same article from different points of view. We have tried, wherever practical, to provide cross references in the introductory chapter of each section.

The audience in mind for this volume is a broad one. We have tried to make the book useful to students in the various social sciences that are concerned with groups. At the same time we have been aware of the questions raised by consultants, teachers, and social engineers. Although this book does not attempt to tell such people how to apply group dynamics, many of the problems they meet daily are examined in the research reports included here. Experience with persons working in occupations which demand insight into group processes encourages us to believe that the more capable of them are quite prepared to employ theoretical explanations of group events in developing their programs.

This book is the product of the work of many people. We deeply appreciate the kindness of those who have given us permission to include their research reports. In preparing the introductory chapters we have drawn upon the work and ideas of many whose publications could not, for lack of space, be reprinted here. We have tried to give credit, but we are sure that sometimes we have forgotten the source of an idea. The pervasive influence of Kurt Lewin's work upon our thinking should be too obvious to require detailed citation. We are indebted in many ways to our colleagues and students, past and present, at the University of Michigan. Without their suggestions, stimulation, and support neither the original volume nor this new edition would have been possible.

D. C.
A. Z.

Ann Arbor, Michigan
March 1921

Part One

INTRODUCTION TO GROUP DYNAMICS

1
Origins of Group Dynamics

If it were possible for the overworked hypothetical man from Mars to take a fresh view of the people of Earth, he would probably be impressed by the amount of time they spend doing things together in groups. He would note that most people cluster into relatively small groups, with the members residing together in the same dwelling, satisfying their basic biological needs within the group, depending upon the same source for economic support, rearing children, and mutually caring for the health of one another. He would observe that the education and socialization of children tend to occur in other, usually larger, groups in churches, schools, or other social institutions. He would see that much of the work of the world is carried out by people who perform their activities in close interdependence within relatively enduring associations. He would perhaps be saddened to find groups of men engaged in warfare, gaining courage and morale from pride in their unit and a knowledge that they can depend upon their buddies. He might be gladdened to see groups of people enjoying themselves in recreations and sports of various kinds. Finally he might be puzzled why so many people spend so much time in little groups talking, planning, and being "in conference." Surely he would conclude that if he wanted to understand much about what is happening on Earth he would have to examine rather carefully the ways in which groups form, function, and dissolve.

Now if we turn to a more customary perspective and view our society through the eyes of Earth's inhabitants, we discover that the functioning or malfunctioning of groups is recognized increasingly as one of society's major problems. In business, government, and the military, there is great interest in improving the productivity of groups. Many thoughtful people are alarmed by the apparent weakening and disintegration of the family. Educators are coming to believe that they cannot carry out their responsibilities fully unless they understand better how the classroom functions as a social group. Those concerned with social welfare are diligently seeking ways to reduce intergroup conflicts between labor and management and among religious and ethnic groups. The operation of juvenile gangs is a most troublesome obstacle in attempts to prevent crime. It is becoming clear that much mental illness derives in some way from the individual's

relations with groups and that groups may be used effectively in mental therapy.

Whether one wishes to understand or to improve human behavior, it is necessary to know a great deal about the nature of groups. Neither a coherent view of man nor an advanced social technology is possible without dependable answers to a host of questions concerning the operation of groups, how individuals relate to groups, and how groups relate to larger society. When, and under what conditions, do groups form? What conditions are necessary for their growth and effective functioning? What factors foster the decline and disintegration of groups? What varieties of groups are possible? Can groups possess any arbitrary collection of properties, or may only certain combinations exist? How do groups affect the behavior, thinking, motivation, and adjustment of individuals? What makes some groups have powerful influence over members while other groups exert little or none? What characteristics of individuals are important determinants of the properties of groups? What combinations of personality, skill, motivation, and values of members have what effects upon the nature and functioning of groups? What determines the nature of relations between groups? When groups are part of a larger social system, what circumstances make them strengthen or weaken the more inclusive organization? How does the social environment of a group affect its properties? Questions like these must be answered before we shall have a real understanding of human nature and human behavior. They must be answered, too, before we can hope to design an optimal society and bring it into being.

The student of group dynamics is interested in acquiring knowledge about the nature of groups and especially about the psychological and social forces associated with groups. Such an interest has, of course, motivated intellectual activities of thoughtful people for centuries. The earliest recorded philosophical literature contains a great deal of wisdom about the nature of groups and the relations between individuals and groups. It also contains a variety of specifications concerning the "best" ways of managing group life. During the period from the sixteenth through the nineteenth centuries there was created in Europe an impressive literature dealing with the nature of man and his place in society. In this literature one can find most of the major orientations, or "basic assumptions," which guide current research and thinking about groups. It is evident that the modern student of group dynamics is not essentially different in his interests from scholars writing at various times over the centuries. And yet, it is equally clear that the approach to the study of groups known as "group dynamics" is strictly a twentieth-century development; it is significantly different from that of preceding centuries.

What, then, is group dynamics? The phrase has gained popular famili-

arity since World War II but, unfortunately, with its increasing circulation its meaning has become imprecise. According to one rather frequent usage, group dynamics refers to a sort of political ideology concerning the ways in which groups should be organized and managed. This ideology emphasizes the importance of democratic leadership, the participation of members in decisions, and the gains both to society and to individuals to be obtained through cooperative activities in groups. The critics of this view have sometimes caricatured it as making "togetherness" the supreme virtue, advocating that everything be done jointly in groups which have and need no leader because everyone participates fully and equally. A second popular usage of the term, group dynamics, has it refer to a set of techniques, such as role playing, buzz-sessions, observation and feedback of group process, and group decision, which have been employed widely during the past decade or two in training programs designed to improve skill in human relations and in the management of conferences and committees. These techniques have been identified most closely with the National Training Laboratories whose annual training programs at Bethel, Maine, have become widely known. According to the third usage of the term, group dynamics, it refers to a field of inquiry dedicated to achieving knowledge about the nature of groups, the laws of their development, and their interrelations with individuals, other groups, and larger institutions.

It is not possible, of course, to legislate how terms are to be used in a language. Nevertheless, it is important for clarity of thinking and communication to distinguish among these three quite distinct things which have been given the same label in popular discussions. Everyone has an ideology, even though he may not be able to state it very explicitly, concerning the ways in which group life should be organized. Those responsible for the management of groups and the training of people for participation in groups can only do so by the use of techniques of one sort or another. But there is no rigidly fixed correspondence between a particular ideology about the "ideal" nature of groups and the use of particular techniques of management and training. And it should be obvious that the search for a better understanding of the nature of group life need not be linked to a particular ideology or adherence to certain techniques of management. In this book we shall limit our usage of the term, group dynamics, to refer to the field of inquiry dedicated to advancing knowledge about the nature of group life.

Group dynamics, in this sense, is a branch of knowledge or an intellectual specialization. Being concerned with human behavior and social relationships, it can be located within the social sciences. And yet it cannot be identified readily as a subpart of any of the traditional academic disciplines. In order to gain a better understanding of how group dy-

namics differs from other familiar fields, let us consider briefly some of its distinguishing characteristics.

1. *Emphasis on theoretically significant empirical research.* We noted above that an interest in groups can be found throughout history and that such an interest cannot, therefore, distinguish group dynamics from its predecessors. The difference lies, rather, in the way this interest is exploited. Until the beginning of the present century those who were curious about the nature of groups relied primarily upon personal experience and historical records to provide answers to their questions. Not being burdened by the necessity of accounting for an accumulation of carefully gathered empirical data, writers in this speculative era devoted their energies to the creation of comprehensive theoretical treatments of groups. These theoretical systems, especially the ones produced during the nineteenth century, were elaborate and widely inclusive, having been created by men of outstanding intellectual ability. The list of names from this era contains such impressive thinkers as Cooley, Durkheim, Freud, Giddings, LeBon, McDougall, Ross, Tarde, Tönnies, and Wundt. Their ideas can still be seen in contemporary discussions of group life.

By the second decade of this century an empiricist rebellion had begun in social science, principally in the United States and especially in psychology and sociology. Instead of being content with speculation about the nature of groups, a few people began to seek out facts and to attempt to distinguish between objective data and subjective impression. Although rather simple empirical questions initially guided this research, a fundamentally new criterion for evaluating knowledge about groups was established. Instead of asking merely whether some proposition about the nature of groups is plausible and logically consistent, those interested in groups began to demand that the proposition be supported by reliable data which can be reproduced by an independent investigator. Major effort went into the devising and improving of techniques of empirical research which would provide reliability of measurement, standardization of observation, effective experimental design, and the statistical analysis of data. When, in the late 1930's, group dynamics began to emerge as an identifiable field the empiricist rebellion was well along in social psychology and sociology, and from the outset group dynamics could employ the research methods characteristic of an empirical science. In fact, group dynamics is to be distinguished from its intellectual predecessors primarily by its basic reliance on careful observation, quantification, measurement, and experimentation.

But one should not identify group dynamics too closely with extreme empiricism. Even in its earliest days, work in group dynamics displayed an interest in the construction of theory and the derivation of testable

hypotheses from theory, and it has come progressively to maintain a close interplay between data collection and the advancement of theory.

2. *Interest in dynamics and interdependence of phenomena.* Although the phrase, group dynamics, specifies groups as the object of study, it also focuses attention more sharply on questions about the dynamics of group life. The student of group dynamics is not satisfied with just a description of the properties of groups or of events associated with groups. Nor is he content with a classification of types of groups or of forms of group behavior. He wants to know how the phenomena he observes depend on one another and what new phenomena might result from the creation of conditions never before observed. In short, he seeks to discover general principles concerning what conditions produce what effects.

This search requires the asking of many detailed questions about the interdependence among specific phenomena. If a change of membership occurs in a group, which other features of the group will change and which will remain stable? Under what conditions does a group tend to undergo a change of leadership? What are the pressures in a group which bring about uniformity of thinking among its members? What conditions inhibit creativity among group members? What changes in a group will heighten productivity, lower it, or not affect it at all? If the cohesiveness of a group is raised, which other of its features will change? Answers to questions like these reveal how certain properties and processes depend on others.

Theories of group dynamics attempt to formulate lawful relations among phenomena such as these. As these theories have been elaborated, they have guided work in group dynamics toward the intensive investigation of such things as change, resistance to change, social pressures, influence, coercion, power, cohesion, attraction, rejection, interdependence, equilibrium, and instability. Terms like these, by suggesting the operation of psychological and social forces, refer to the dynamic aspects of groups and play an important role in theories of group dynamics.

3. *Interdisciplinary relevance.* It is important to recognize that research on the dynamics of groups has not been associated exclusively with any one of the social science disciplines. Sociologists have, of course, devoted great energy to the study of groups, as illustrated by investigations of the family, gangs, work groups, military units, and voluntary associations. Psychologists have directed their attention to many of the same kinds of groups, concentrating for the most part on the ways groups influence the behavior, attitudes, and personalities of individuals and the effects of characteristics of individuals on group functioning. Cultural anthropologists, while investigating many of the same topics as sociologists and psychologists, have contributed data on groups living under

conditions quite different from those of modern industrial society. Political scientists have extended their traditional interest in large institutions to include studies of the functioning of legislative groups, pressure groups, and the effects of group membership on voting. And, economists have come increasingly to collect data on the way decisions to spend or save money are made in the family, how family needs and relationships affect the size of the labor force, how goals of unions affect policies in business, and how decisions having economic consequences are reached in businesses of various kinds. Since an interest in groups is shared by the various social science disciplines, it is clear that any general knowledge about the dynamics of groups has significance widely throughout the social sciences.

4. *Potential applicability of findings to social practice.* Everyone who feels a responsibility for improving the functioning of groups and the quality of their consequences for individuals and society must base his actions upon some more or less explicit view of the effects that will be produced by different conditions and procedures. Anyone who is concerned with improving the quality of work in a research team, the effectiveness of a Sunday school class, the morale of a military unit, with decreasing the destructive consequences of intergroup conflict, or with attaining any socially desirable objective through groups, can make his efforts more effective by basing them on a firm knowledge of the laws governing group life.

The various professions which specialize in dealing with particular needs of individuals and of society have much to gain from advances in the scientific study of groups. One outstanding development in the more advanced societies during the past century has been the increasing differentiation undergone by the traditional professions of medicine, law, education, and theology. Today there are people who receive extensive training and devote their lives to such professional specialties as labor-management mediation, public health education, marriage counseling, human relations training, intergroup relations, social group work, pastoral counseling, hospital administration, adult education, public administration, psychiatry, and clinical psychology—just to mention a few. The professionalization of practice in these many areas has brought about a self-conscious desire to improve standards and the establishment of requirements for proper training. The major universities now have professional schools in many of these fields to provide such training. As this training has been extended and rationalized members of these professions have become increasingly aware of the need for knowledge of the basic findings and principles produced in the social sciences. All of these professions must work with people, not simply as individuals but in

groups and through social institutions. It should not be surprising, therefore, to find that courses in group dynamics are becoming more and more common in the professional schools, that people trained in group dynamics are being employed by agencies concerned with professional practice, and that group dynamics research is often carried out in connection with the work of such agencies.

In summary, then, we have proposed that group dynamics should be defined as a field of inquiry dedicated to advancing knowledge about the nature of groups, the laws of their development, and their interrelations with individuals, other groups, and larger institutions. It may be identified by four distinguishing characteristics: (*a*) an emphasis on theoretically significant empirical research, (*b*) an interest in dynamics and the interdependence among phenomena, (*c*) a broad relevance to all the social sciences, and (*d*) the potential applicability of its findings in efforts to improve the functioning of groups and their consequences on individuals and society. Thus conceived, group dynamics need not be associated with any particular ideology concerning the ways in which groups should be organized and managed nor with the use of any particular techniques of group management. In fact, it is a basic objective of group dynamics to provide a better scientific basis for ideology and practice.

Conditions Fostering the Rise of Group Dynamics

Group dynamics began, as an identifiable field of inquiry, in the United States toward the end of the 1930's. Its origination as a distinct specialty is associated primarily with Kurt Lewin (1890–1947) who popularized the term, group dynamics, made significant contributions to both research and theory in group dynamics, and in 1945 established the first organization devoted explicitly to research on group dynamics. Lewin's contribution was of great importance, but, as we shall see in detail, group dynamics was not the creation of just one person. It was, in fact, the result of many developments which occurred over a period of several years and in several different disciplines and professions. Viewed in historical perspective, group dynamics can be seen as the convergence of certain trends within the social sciences and, more broadly, as the product of the particular society in which it arose.

The time and place of the rise of group dynamics were, of course, not accidental. American society in the 1930's provided the kind of conditions required for the emergence of such an intellectual movement. And, over the years since that time, only certain countries have afforded a favorable environment for its growth. To date, group dynamics has taken root primarily in the United States and the countries of northwestern Europe,

although there have also been important developments in Israel, Japan, and India. Three major conditions seem to have been required for its rise and subsequent growth.

A Supportive Society

If any field of inquiry is to prosper, it must exist in a surrounding society which is sufficiently supportive to provide the institutional resources required. By the end of the 1930's cultural and economic conditions in the United States were favorable for the emergence and growth of group dynamics. Great value was placed on science, technology, rational problem-solving, and progress. There was a fundamental conviction that in a democracy human nature and society can be deliberately improved by education, religion, legislation, and hard work. American industry had grown so rapidly, it was believed, not only because of abundant natural resources but especially because it had acquired technological and administrative "know how." The heroes of American progress were inventors, like Franklin, Fulton, Whitney, Morse, Bell, and Edison, and industrialists who fashioned new social organizations for efficient mass production. Although there had grown up a myth about the inventor as a lone wolf working in his own tool shed, research was already becoming a large-scale operation—just how big may be seen in the fact that private and public expenditures for research in the United States in 1930 amounted to more than $160,000,000 and increased, even during the depression years, to nearly $350,000,000 by 1940.

Most of this research was, of course, in the natural and biological sciences and in engineering and medicine. The idea that research could be directed profitably to the solution of social problems gained acceptance much more slowly. But even in the 1930's significant resources were being allotted to the social sciences. The dramatic use of intelligence testing during World War I had stimulated research on human abilities and the application of testing procedures in school systems, industry, and government. "Scientific management," though slow to recognize the importance of social factors, was laying the groundwork for a scientific approach to the management of organizations. The belief that the solution of "social problems" could be facilitated by systematic fact-finding was gaining acceptance. Thomas and Znaniecki (45) had, by 1920, demonstrated that the difficulties accompanying the absorption of immigrants into American society could be investigated systematically; several research centers had been created to advance knowledge and to improve practice with respect to the welfare of children; by the early 1930's practices in social work and juvenile courts were being modified on the basis of findings from an impressive series of studies on juvenile gangs in Chicago which

had been conducted by Thrasher (46) and Shaw (40); and, enough research had been completed on intergroup relations by 1939 so that Myrdal (31) could write a comprehensive treatment of the "Negro problem" in America. Symptomatic of the belief in the feasibility of empirical research on social problems was the establishment in 1936 of the Society for the Psychological Study of Social Issues with 333 charter members. Thus, when the rapid expansion of group dynamics began after World War II, there were important segments of American society prepared to provide financial support for such research. Support came not only from academic institutions and foundations but also from business, the Federal Government, and various organizations concerned with improving human relations.

The important contribution to the rise and spread of group dynamics made by the administrative practices of American academic institutions should not be overlooked. The interdisciplinary and multiprofessional character of group dynamics could develop only within academic institutions possessing a considerable administrative flexibility. Wherever there has been a willingness to break down the traditional separations of social science departments from professional schools and of one discipline from another, research on group dynamics has been facilitated. It is a significant fact, for example, that the earliest work specifically labeled as group dynamics took place, not in one of the traditional social science departments, but in the Child Welfare Research Station at the State University of Iowa and involved collaboration among psychologists, nutritionists, social workers, and industrial engineers. The Research Center for Group Dynamics, the first agency devoted explicitly to research in this new field, was established at the Massachusetts Institute of Technology under conditions affording optimal freedom for innovation. And when it moved to the University of Michigan the Center became part of a new administrative unit, the Institute for Social Research, which was designed to permit joint appointments with any appropriate department or professional school. Other important centers of research in the field of group dynamics have enjoyed similar freedom from disciplinary restrictions, as illustrated by the Research Center for Human Relations at New York University, the Laboratory for Research in Social Relations of the University of Minnesota, the Laboratory of Social Relations of Harvard University, and the Institute for Research in Social Science at the University of North Carolina.

Developed Professions

The attempt to formulate a coherent view of the nature of group life may be motivated by intellectual curiosity or by the desire to improve

social practice. A study of the conditions bringing the field of group dynamics into existence reveals that both of these motivations played an important role. Interest in groups and a recognition of their importance in society were early apparent among social scientists, who according to a common stereotype are motivated by idle curiosity. But it should be also noted that some of the most influential early systematic writing about the nature of groups came from the pens of people working in the professions, people whose motivation has often been said to be purely practical. Before considering the social scientific background of group dynamics, we shall describe briefly some of the developments within the professions which facilitated its rise.

By the 1930's a large number of distinct professions had come into existence in the United States, probably more than in any other country. Many of these worked directly with groups of people, and as they became concerned with improving the quality of their practice they undertook to codify procedures and to discover general principles for dealing with groups. It gradually became evident, more quickly in some professions than in others, that generalizations from experience can go only so far and that systematic research is required to produce a deeper understanding of group life. Thus, when group dynamics began to emerge as a distinct field, the leaders of some of the professions were well prepared to foster the idea that systematic research on group life could make a significant contribution to their professions. As a result, several professions helped to create a favorable atmosphere for the financing of group dynamics research, provided from their accumulated experience a broad systematic conception of group functioning from which hypotheses for research could be drawn, afforded facilities in which research could be conducted, and furnished the beginnings of a technology for creating and manipulating variables in experimentation on groups. Four professions played an especially important part in the origin and growth of group dynamics.

Social group work. This profession should be mentioned first because it was one of the earliest to recognize explicitly that groups can be managed so as to bring about desired changes in members. Being responsible for the operation of clubs, recreational groups, camps, and athletic teams, group workers came to realize that their techniques of dealing with groups had important effects on group processes and on the behaviors, attitudes, and personalities of those participating in these groups. Although the objective of group work included such diverse purposes as "character building," "providing constructive recreation," "keeping the kids off the street and out of trouble," and, later, "psychotherapy," it gradually became evident that, whatever the objective, some techniques of group management were more successful than others. One of the

earliest experimental studies of groups concerned the effects of several leadership practices on the adjustment of boys in their summer camp cabins (33). The wealth of experience acquired by group workers has been systematized by Busch (9), Coyle (11), and Wilson and Ryland (54). Group dynamics drew heavily on this experience at the outset, and group dynamicists have continued to collaborate with group workers on various research projects.

Group psychotherapy. Although group psychotherapy is commonly considered a branch of psychiatry, the use of groups for psychotherapeutic purposes has grown up in other than strictly medical settings, the Alcoholics Anonymous movement being one outstanding example. In the development of a professional approach to psychotherapeutic work with groups psychoanalytic theory has exerted the major, though not exclusive, influence. Freud's writing (especially his *Group psychology and the analysis of the ego*) has set the tone, but many of the techniques for dealing with groups and much of the emphasis upon group processes have been contributed by people drawing from the field of group work—see, for example, the writings of Redl (37), Scheidlinger (39), and Slavson (43). A rather different tradition, although strongly psychoanalytic in its orientation, has grown up in England under the influence of Bion (7) and a group of people associated with the Tavistock Institute of Human Relations (53). An important feature of this approach is the application of psychoanalytic group work to "natural" groups in the military establishment, industry, and the community. Still another approach in group psychotherapy was established by the unusually creative and pioneering work of Moreno (30). His techniques of role playing (more precisely, psychodrama and sociodrama) and sociometry were among the earliest contributions to the field and have been of great value both in group psychotherapy and in research on group dynamics. Although many of the developments in group psychotherapy and in group dynamics have been contemporaneous, the early work in group psychotherapy had a clear and distinct influence on the initial work in group dynamics. And the two lines of endeavor have continued to influence each other, as can been seen, for example, in the systematic treatment of group psychotherapy by Bach (3).

Education. The revolution in American public education which occurred in the first quarter of this century, influenced strongly by the writings of Dewey, broadened the conception of both the purposes and procedures of education. The goal of education in the public schools became the preparation of children for life in society rather than merely the transmission of knowledge. "Learning by doing" became a popular slogan which was implemented by such things as group projects, extracurricular activities, and student government. Teachers became interested in in-

stilling skills of leadership, cooperation, responsible membership, and human relations. It gradually became apparent that teachers, like group workers, were having to take actions affecting the course of events in children's groups and needed principles to guide these events toward constructive ends. A similar trend was developing simultaneously in adult education, where the problems were made even more apparent by the voluntary nature of participation in adult educational programs. There began to emerge the conception of the teacher as a group leader who affects his students' learning not merely by his subject-matter competence but also by his ability to heighten motivation, stimulate participation, and generate morale. Although controversy over this general approach to education has persisted up to the present time, the education profession had, by the late 1930's, accumulated a considerable fund of knowledge about group life. Group dynamics drew upon this experience in formulating hypotheses for research, and group dynamicists established close working relations with educators and schools of education. Both educational practice and research in group dynamics have benefited from this association.

Administration. Under this label is a whole cluster of specialties, all concerned with the management of large organizations. Included are such specific professions as business administration, public administration, hospital administration, and educational administration. Although each of these must develop expertise in its particular sphere of operation, all share the necessity of designing effective procedures for coordinating the behavior of people. For this reason, they share a common interest in the findings of social science. It might be expected, therefore, that systematic treatments of management would early come to a recognition of the importance of groups in large enterprises and that management practices for dealing with groups would become highly developed. Actually, the historical facts are rather different. Until the 1930's efforts to develop principles of management were remarkably blind to the existence of groups. One noteworthy exception is found in the writings of Mary P. Follett (13, 14), who after World War I attempted to construct a systematic approach to administration, and more generally to government, in which groups were recognized as important elements. Her ideas, however, gained little acceptance.

In fact, the individualistic orientation held sway until about 1933 when the first of several books by Mayo and his associates (27, 38) made its appearance. These publications reported an extensive program of research begun in 1927 at the Hawthorne plant of the Western Electric Company. The initial objective of this research was to study the relation between conditions of work and the incidence of fatigue among workers. A variety of experimental variations was introduced—frequency of rest

pauses, length of working hours, nature of wage incentives—with the intention of discovering their influence on fatigue and productivity. It is to the great credit of these investigators that they were alert to the existence of effects not anticipated, for the important changes actually produced by their experiments turned out to be in interpersonal relations among workers and between workers and management. The results of this program of research led Mayo and his associates to place major emphasis on the social organization of the work group, on the social relations between the supervisor and his subordinates, on informal standards governing the behavior of members of the work groups, and on the attitudes and motives of workers existing in a group context.

The impact of this research upon all branches of administration can hardly be exaggerated. Haire has described it in the following way (17, 376):

> After the publication of these researches, thinking about industrial problems was radically and irrevocably changed. It was no longer possible to see a decrement in productivity simply as a function of changes in illumination, physical fatigue, and the like. It was no longer possible to look for explanation of turnover simply in terms of an economic man maximizing dollar income. The role of the leader began to shift from one who directed work to one who enlisted co-operation. The incentive to work was no longer seen as simple and unitary but rather infinitely varied, complex, and changing. The new view opened the way for, and demanded, more research and new conceptualizations to handle the problems.

Another important contribution to this new view of management was the systematic theory of management published in 1938 by Barnard (5) which was the product of his many years of experience as a business executive. Although this book did not put primary stress on groups as such, it placed human needs and social processes in the forefront of consideration. Barnard made it clear that management practice can be satisfactorily understood and effectively fashioned only if large organizations are conceived as social institutions composed of people in social interrelations.

The emergence of group dynamics in the late 1930's came, then, at the very time when administrators and organization theorists were beginning to emphasize the importance of groups and of "human relations" in administration. In subsequent years the findings from research in group dynamics have been incorporated increasingly into systematic treatments of administration, and a growing number of administrators have supported group dynamics research in various ways.

Before leaving the discussion of the role of the professions in the origin and growth of group dynamics, we should note that the developments reported here had counterparts to varying degrees in other areas of social

practice, many of which were not highly professionalized. Special mention should be made of the support which has come from those concerned with providing a scientific basis for work in intergroup relations, public health, the military, religious education, community organization, and speech.[1]

Developed Social Science

In considering the conditions which stimulated the present approach to group dynamics within the social sciences, it is essential to recognize that this approach could originate only because certain advances had been accomplished in the social sciences at large. Thus, the rise of group dynamics required not only a supportive society and developed professions but also developed social sciences.

A basic premise of group dynamics is that the methods of science can be employed in the study of groups. This assumption could be entertained seriously only after the more general belief had gained acceptance that man, his behavior, and his social relations can be properly subjected to scientific investigation. And, any question about the utilization of scientific methods for learning about human behavior and social relations could not rise, of course, before the methods of science were well developed. It was only in the nineteenth century that serious discussions of this possibility occurred. Comte's extensive treatment of positivism in 1830 provided a major advance in the self-conscious examination of basic assumptions about the possibility of subjecting human and social phenomena to scientific investigation; and the controversies over evolutionary theories of man in the last half of the century resulted in a drastically new view of the possibility of extending the scientific enterprise to human behavior. Not until the last decades of the nineteenth century were there many people actually observing, measuring, or conducting experiments on human behavior. The first psychological laboratory was established only in 1879.

One can hardly imagine how group dynamics could have come into existence before the belief had taken root that empirical research can be conducted on groups of people, that important social phenomena can be measured, that group variables can be manipulated for experimental purposes, and that laws governing group life can be discovered. These

[1] For example, at the same time Lewin established the Research Center for Group Dynamics at M.I.T., the American Jewish Congress created a related organization known as the Commission on Community Interrelations to undertake "action research" on problems of intergroup relations. And heavy financial support for research in group dynamics has come from the National Institute of Mental Health, the United States Navy and Air Force, and several large business organizations.

beliefs gained acceptance only in recent years, though they had been advocated now and then by writers since the seventeenth century, and they are not universally held even today. There remain those who assert that human behavior is not lawful, that important social phenomena cannot be quantified, and that experimentation on groups is impossible or immoral, or even both. William H. Whyte, Jr. (52), in his attack on "the organization man," has spoken most eloquently for those who remain skeptical about the applicability of the methods of science to the study of man. He defines *scientism* as "the promise that with the same techniques that have worked in the physical sciences we can eventually create an exact science of man." He identifies scientism as a major component of the Social Ethic which, in his opinion, is weakening American society. And, the tragedy of scientism, he maintains, is that it is based on an illusion, for "a 'science of man' cannot work in the way its believers think it can." Were such views to prevail, group dynamics could not thrive.

The reality of groups. An important part of the early progress in social science consisted in clarifying certain basic assumptions about the reality of social phenomena. The first extensions of the scientific method of human behavior occurred in close proximity to biology. Techniques of experimentation and measurement were first applied to investigations of the responses of organisms to stimulation of the sense organs and to modification of responses due to repeated stimulation. There was never much doubt about the "existence" of individual organisms. But when attention turned to groups of people and to social institutions, a great confusion arose. Discussion of these matters invoked terms like "group mind," "collective representations," "collective unconscious," and "culture." And people argued heatedly as to whether such terms refer to any real phenomena or whether they are mere "abstractions" or "analogies." On the whole, the disciplines concerned with institutions (anthropology, economics, political science, and sociology) have freely attributed concrete reality to supra-individual entities, whereas psychology, with its interest in the physiological bases of behavior, has been reluctant to admit existence to anything other than the behavior of organisms. But in all these disciplines there have been conflicts between "institutionalists" and "behavioral scientists."

The sharpest cleavage occurred in the early days of social psychology, naturally enough since it is a discipline concerned directly with the relations between the individual and society. Here the great debate over the "group mind" reached its climax in the 1920's. Although many people took part, the names of William McDougall and Floyd Allport are most closely associated with this controversy. At one extreme was the position that groups, institutions, and culture have reality quite apart from the

particular individuals who participate in them. It was maintained that a group may continue to exist even after there has been a complete turnover of membership, that it has properties, such as a division of labor, a system of values, and a role structure, which cannot be conceived as properties of individuals, and that laws governing these group-level properties must be stated at the group level. A slogan reflecting this approach is the statement, attributed to Durkheim, that "every time a social phenomenon is directly explained by a psychological phenomenon, we may be sure that the explanation is false." In strong reaction to all this was the view, advanced most effectively by Allport, that only individuals are real and that groups or institutions are "sets of ideals, thoughts, and habits repeated in each individual mind and existing only in those minds" (1, 9). Groups, then, are abstractions from collections of individual organisms. "Group mind" refers to nothing but similarities among individual minds, and individuals cannot be parts of groups, for groups exist only in the minds of men.

It may appear strange that social scientists should get involved in philosophical considerations about the nature of reality. As a matter of fact, however, the social scientist's view of reality makes a great deal of difference to his scientific behavior. In the first place, it determines what things he is prepared to subject to empirical investigation. Lewin pointed out this fact succinctly in the following statement (22, 190):

> Labeling something as "nonexistent" is equivalent to declaring it "out of bounds" for the scientist. Attributing "existence" to an item automatically makes it a duty of the scientist to consider this item as an object of research; it includes the necessity of considering its properties as "facts" which cannot be neglected in the total system of theories; finally, it implies that the terms with which one refers to the item are acceptable as scientific "concepts" (rather than as "mere words").

Secondly, the history of science shows a close interaction between the techniques of research which at any time are available and the prevailing assumptions about reality. Insistence on the existence of phenomena which cannot at that time be objectively observed, measured, or experimentally manipulated accomplishes little of scientific value if it does not lead to the invention of appropriate techniques of empirical research. As a practical matter, the scientist is justified in excluding from consideration allegedly real entities whose empirical investigation appears impossible. And yet, as soon as a new technique makes it possible to treat empirically some new entity, this entity immediately acquires "reality" for the scientist. As Lewin noted (22, 193), "The taboo against believing in the existence of a social entity is probably most effectively broken by handling this entity experimentally."

The history of the "group mind" controversy well illustrates these points. The early insistence on the reality of the "group mind," before techniques for investigating such phenomena were developed, contributed little to their scientific study. Allport's denial of the reality of the group actually had a strongly liberating influence on social psychologists, for he was saying, in effect, "Let us not be immobilized by insisting on the reality of things which we cannot now deal with by means of existing techniques of research." He, and like-minded psychologists, were then able to embark upon a remarkably fruitful program of research on the attitudes of individuals toward institutions and on the behavior of individuals in social settings. Although this view of reality was too limited to encourage the empirical study of properties of groups, it did stimulate the development of research techniques which subsequently made a broader view of reality scientifically feasible. Until these techniques were in existence those who persisted in attributing reality to groups and institutions were forced to rely on purely descriptive studies or armchair speculation from personal experience, and such work was legitimately criticized as being "subjective" since the objective techniques of science were rarely applied to such phenomena.

The development of techniques of research. Of extreme importance for the origin of group dynamics, then, was the shaping of research techniques which could be extended to research on groups. This process, of course, took time. It began in the last half of the nineteenth century with the rise of experimental psychology. Over the subsequent years more and more aspects of human experience and behavior were subjected to techniques of measurement and experimentation. Thus, for example, during the first third of this century impressive gains were made in the measurement of attitudes. Noteworthy among these were the scale of "social distance" which was developed by Bogardus (8), the comprehensive treatment of problems of scaling by Thurstone (47) and Thurstone and Chave (48), and the much simpler scaling technique of Likert (24). Parallel to these developments, and interacting with them, were major advances in statistics. By the late 1930's powerful statistical methods had been fashioned which made possible efficient experimental designs and the evaluation of the significance of quantitative findings. These advances were important, of course, not only for the rise of group dynamics but for progress in all the behavioral sciences.

Within this general development we may note three methodological gains contributing specifically to the rise of group dynamics.

1. *Experiments on individual behavior in groups.* As noted above, research in group dynamics is deeply indebted to experimental psychology for the invention of techniques for conducting experiments on the conditions affecting human behavior. But experimental psychology did not

concern itself, at first, with social variables; it was only toward the beginning of the present century that a few investigators embarked upon experimental research designed to investigate the effects of social variables upon the behavior of individuals. The nature of this early experimental social psychology has been described by G. W. Allport this way (2, 46):

The first experimental problem—indeed the only problem for the first three decades of experimental research—was formulated as follows: *What change in an individual's normal solitary performance occurs when other people are present?*

And, according to Allport, the first laboratory answer to this question came from Triplett (49) who compared the performance of children in winding fishing reels when working alone and when working together with other children. Triplett concluded from this experiment that the group situation tended to generate an increase in output of energy and achievement.

Of greater significance for the development of experimental social psychology was the work of Moede (28), begun at Leipzig in 1913, in which he undertook a systematic investigation of the effects of having several people take part simultaneously in a variety of the then standard psychological experiments. This work was influential in the development of social psychology primarily because Münsterberg called it to the attention of F. H. Allport and encouraged him to repeat and extend it. Allport (1) not only conducted several impressive experiments but also provided a theoretical framework for interpreting the findings. By 1935 Dashiell (12) was able to write a long summary of the work comparing behavior elicited when the subject was working in isolation and in the presence of others. Another important study of this era was that conducted by Moore (29) in which he experimentally demonstrated the influence of "expert" and "majority" opinion upon the moral and aesthetic judgments of individuals. These early experiments not only demonstrated the feasibility of conducting experiments on the influence of groups upon individual behavior but they also developed techniques which are still in use.

A somewhat different, but closely related, line of research attempted to compare the performance of individuals and of groups. In these studies, as illustrated by the work of Gordon (16), Watson (50), and Shaw (41), tasks were employed which could be performed either by individuals or by groups of people, and the question was asked whether individuals or groups did the better job. As it turned out, this question is unanswerable unless the conditions are further specified, but much was learned in seeking for an answer.

All this work made it much more likely that such a field as group dy-

namics could develop by bringing groups into the laboratory. Although these early experiments did not, strictly speaking, deal with properties of groups, they made it evident that the influence of groups upon individuals could be studied experimentally and they made it much easier to conceive of the idea of varying group properties experimentally in the laboratory.

2. *Controlled observation of social interaction.* One might think that the most obvious device for learning about the nature of group functioning would be simply to watch groups in action. Indeed, this procedure has been employed by chroniclers and reporters throughout history and has continued to be a source of data, perhaps most impressively as employed by social anthropologists in their reports of the behavior, culture, and social structure of primitive societies. The major drawback of the procedure as a scientific technique is that the reports given by observers (the scientific data) depend to such a high degree upon the skill, sensitivity, and interpretive predilections of the observer. (This difficulty can be readily demonstrated by comparing the reports given by several people who have independently observed some even moderately complex social interaction.) The first serious attempts to refine methods of observation, so that objective and quantitative data might be obtained, occurred around 1930 in the field of child psychology. A great amount of effort went into the construction of categories of observation which would permit an observer simply to indicate the presence or absence of a particular kind of behavior or social interaction during the period of observation. Typically, reliability was heightened by restricting observation to rather overt interactions whose "meaning" could be revealed in a short span of time and whose classification required little interpretation by the observer. Methods were also developed for sampling the interactions of a large group of people over a long time so that efficient estimates of the total interaction could be made on the basis of more limited observations. By use of such procedures and by careful training of observers quantitative data of high reliability were obtained. The principal researchers responsible for these important advances were Goodenough (15), Jack (19), Olson (34), Parten (35), and Thomas (44).

The controlled observation of social interaction, which was initially developed to provide objective and quantitative data concerning the behavior of children in natural settings, has subsequently been used extensively in research in group dynamics. One important development has been the combining of observational techniques with experimental procedures in order to obtain quantitative evaluations of the effects of various experimental conditions on interaction in groups. Examples of the use of controlled observation may be found in Chapters 7, 22, 26, 28, and 33.

3. *Sociometry.* A somewhat different approach to the study of groups

is to ask questions of the members. Data obtained in this manner can, of course, reflect only those things the individual is able, and willing, to report. Nevertheless, such subjective reports from the members of a group might be expected to add valuable information to the more objective observations of behavior. Of the many devices for obtaining information from group members one of the earliest and most commonly used is the sociometric test, which was invented by Moreno (30). During World War I, Moreno had administrative responsibility for a camp of Tyrolese displaced persons, and he observed that the adjustment of people seemed to be better when they were allowed to form their own groups within the camp. Later, in the United States, he undertook to check this insight by more systematic research on groups of people in such institutions as schools and reformatories. For this purpose he constructed a simple questionnaire on which each person was to indicate those other people with whom he would prefer to share some specified activity. It quickly became apparent that this device, and modifications of it, could provide valuable information about interpersonal attractions and repulsions among any collection of people. The data concerning "who chooses whom" could be converted into a "sociogram," or a picture in which individuals are represented by circles and choices by lines. Inspection of such sociograms revealed that some groups were more tightly knit than others, that individuals varied greatly in their social expansiveness and in the number of choices they received, and that cliques formed on the basis of characteristics such as age, sex, or race. In short, the sociometric test promised to yield valuable information about both individuals and interpersonal relations in groups. Although based essentially on subjective reports of individuals, the sociometric test provides quantifiable data about patterns of attractions and repulsions existing in a group. The publication by Moreno (30) in 1934 of a major book based on experience with the test and the establishment in 1937 of a journal, *Sociometry,* ushered in a prodigious amount of research employing the sociometric test and numerous variations of it.

The significance of sociometry for group dynamics lay both in the provision of a useful technique for research on groups and in the attention it directed to such features of groups as social position, patterns of friendship, subgroup formation, and more generally, informal structure.

The Beginnings of Group Dynamics

By the mid-1930's conditions were ripe within the social sciences for a rapid advance in empirical research on groups. And, in fact, a great burst of such activity did take place in America just prior to the entry of the United States into World War II. This research, moreover, began to dis-

play quite clearly the characteristics that are now associated with work in group dynamics. Within a period of approximately five years several important research projects were undertaken, more or less independently of one another, but all sharing these distinctive features. We now briefly consider four of the more influential of these.

Experimental Creation of Social Norms

In 1936 Sherif (42) published a book containing a systematic theoretical analysis of the concept, social norm, and an ingenious experimental investigation of the origin of social norms among groups of people. Probably the most important feature of this book was its bringing together of ideas and observations from sociology and anthropology and techniques of laboratory experimentation from experimental psychology. Sherif began by accepting the existence of customs, traditions, standards, rules, values, fashions, and other criteria of conduct (which he subsumed under the general label, social norm). Further, he agreed with Durkheim that such "collective representations" have, from the point of view of the individual, the properties of exteriority and constraint. At the same time, however, he agreed with F. H. Allport that social norms have been too often treated as something mystical and that scientific progress can be achieved only by subjecting phenomena to acceptable techniques of empirical research. He proposed that social norms should be viewed simultaneously in two ways: (*a*) as the product of social interaction and (*b*) as social stimuli which impinge upon any given individual who is a member of a group having these norms. Conceived in this way, it would be possible to study experimentally the origin of social norms and their influence on individuals.

In formulating his research problem, Sherif drew heavily upon the findings of gestalt psychology in the field of perception. He noted that this work had established that there need not necessarily be a fixed point-to-point correlation between the physical stimulus and the experience and behavior it arouses. The frame of reference which a person brings to a situation influences in no small way how he sees it. Sherif proposed that psychologically a social norm functions as such a frame of reference. Thus, if two people with different norms face the same situation (for example, a Mohammedan and a Christian confront a meal of pork chops), they will see it, and react to it, in widely different ways. For each, however, the norm serves to give meaning and to provide a stable way of reacting to the environment.

Having thus related social norms to the psychology of perception, Sherif proceeded to ask how norms arise. It occurred to him that he might gain insight into this problem by placing people in a situation which had

no clear structure and where they would not be able to bring to bear any previously acquired frame of reference or social norm. Sherif stated the general objective of his research as follows (42, 90–91):

> . . . What will an individual do when he is placed in an objectively unstable situation in which all basis of comparison, as far as the external field of stimulation is concerned, is absent? In other words, what will he do when the external frame of reference is eliminated, in so far as the aspect in which we are interested is concerned? Will he give a hodgepodge of erratic judgments? Or will he establish a point of reference of his own? *Consistent* results in this situation may be taken as the index of a subjectively evolved frame of reference. . . .
>
> Coming to the social level we can push our problem further. What will a group of people do in the same unstable situation? Will the different individuals in the group give a hodgepodge of judgments? Or will there be established a common norm peculiar to the particular group situation and depending upon the presence of these individuals together and their influence upon one another? If they in time come to perceive the uncertain and unstable situation which they face in common in such a way as to give it some sort of order, perceiving it as ordered by a frame of reference developed among them in the course of the experiment, and if this frame of reference is peculiar to the group, then we may say that we have at least the prototype of the psychological process involved in the formation of a norm in a group.

In order to subject these questions to experimental investigation, Sherif made use of what is known in psychology as the autokinetic effect. It had previously been shown in perceptual research that if a subject looks at a stationary point of light in an otherwise dark room he will soon see it as moving. Furthermore, there are considerable individual differences in the extent of perceived motion. Sherif's experiment consisted of placing subjects individually in the darkened room and getting judgments of the extent of apparent motion. He found that upon repeated test the subject establishes a range within which his judgments fall and that this range is peculiar to each individual. Sherif then repeated the experiment, but this time having groups of subjects observe the light and report aloud their judgments. Now he found that the individual ranges of judgment converged to a group range which was peculiar to the group. In additional variations, Sherif was able to show that "when the individual, in whom a range and a norm within that range are first developed in the individual situation, is put into a group situation, together with other individuals who also come into the situation with their own ranges and norms established in their own individual sessions, the ranges and norms tend to converge" (42, 104). Moreover, "when a member of a group faces the same situation subsequently *alone*, after once the range and norm of his group have been established, he perceives the situation in terms of the range and norm that he brings from the group situation" (42, 105).

Sherif's study did much to establish the feasibility of subjecting group

phenomena to experimental investigation. It should be noted that he did not choose to study social norms existing in any natural group. Instead, he formed new groups in the laboratory and observed the development of an entirely new social norm. Although Sherif's experimental situation might seem artificial, and even trivial, to the anthropologist or sociologist, this very artificiality gave the findings a generality not ordinarily achieved by naturalistic research. By subjecting a group-level concept, like social norm, to psychological analysis, Sherif helped obliterate what he considered to be the unfortunate categorical separation of individual and group. And his research helped establish among psychologists the view that certain properties of groups have reality, for, as he concluded, "the fact that the norm thus established is peculiar to the group suggests that there is a factual psychological basis in the contentions of social psychologists and sociologists who maintain that new and supra-individual qualities arise in the group situations" (42, 105).

The Social Anchorage of Attitudes

During the years 1935–39, Newcomb (32) was conducting an intensive investigation of the same general kind of problem that interested Sherif but with quite different methods. Newcomb selected a "natural" rather than "laboratory" setting in which to study the operation of social norms and social influence processes, and he relied primarily upon techniques of attitude measurement, sociometry, and interviewing to obtain his data. Bennington College was the site of his study; the entire student body were his subjects, and attitudes toward political affairs provided the content of the social norms.

It was first established that the prevailing political atmosphere of the campus was "liberal" and that entering students, who came predominantly from "conservative" homes, brought with them attitudes which deviated from the college culture. The power of the college community to change attitudes of students was demonstrated by the fact that each year senior students were more liberal than freshmen. The most significant feature of this study, however, was its careful documentation of the ways in which these influences operated. Newcomb showed, for example, how the community "rewarded" students for adopting the approved attitudes. Thus, a sociometric-like test, in which students chose those "most worthy to represent the College at an intercollegiate gathering," revealed that the students thus chosen in each class were distinctly less conservative than those not so chosen. And, those students enjoying a reputation for having a close identification with the College, for being "good citizens," were also relatively more liberal in their political attitudes. By means of several ingenious devices Newcomb was able to discover the student's

"subjective role," or self-view of his own relationship to the student community. Analysis of these data revealed several different ways in which students accommodated to the social pressures of the community. Of particular interest in this analysis was the evidence of conflicting group loyalties between membership in the college community and membership in the family group and some of the conditions determining the relative influence of each.

Newcomb's study showed that the attitudes of individuals are strongly rooted in the groups to which people belong, that the influence of a group upon an individual's attitudes depends upon the nature of the relationship between the individual and the group, and that groups evaluate members, partially at least, on the basis of their conformity to group norms. Although most of these points had been made, in one form or another, by writers in the speculative era of social science, this study was especially significant because it provided detailed, objective, and quantitative evidence. It thereby demonstrated, as Sherif's study did in a different way, the feasibility of conducting scientific research on important features of group life.

Groups in Street Corner Society

The sociological and anthropological background of group dynamics is most apparent in the third important study of this era. In 1937 Whyte moved into one of the slums of Boston to begin a three and one-half year study of social clubs, political organizations, and racketeering. His method was that of the "participant observer," which had been most highly developed in anthropological research. More specifically, he drew upon the experience of Warner and Arensberg which was derived from the "Yankee City" studies. In various ways he gained admittance to the social and political life of the community and faithfully kept notes of the various happenings which he observed or heard about. In the resulting book, Whyte (51) reported in vivid detail on the structure, culture, and functioning of the Norton Street gang and the Italian Community Club. The importance of these social groups in the life of their members and in the political structure of the larger society was extensively documented.

In the interpretation and systematization of his findings, Whyte was greatly influenced by the "interactionist" point of view that was then being developed by Arensberg and Chapple and which was subsequently presented by such writers as Chapple (10), Bales (4), and Homans (18). The orientation derived by Mayo and his colleagues from the Western Electric studies is also evident in Whyte's analysis of his data. Although he made no effort to quantify the interactions which he observed, Whyte's great care for detail lent a strong flavor of objectivity to his account of the

interactions among the people he observed. His "higher order" concepts, like social structure, cohesion, leadership, and status, were clearly related to the more directly observable interactions among people, thus giving them a close tie with empirical reality.

The major importance of this study for subsequent work in group dynamics was threefold: (*a*) It dramatized, and described in painstaking detail, the great significance of groups in the lives of individuals and in the functioning of larger social systems. (*b*) It gave impetus to the interpretation of group properties and processes in terms of interactions among individuals. (*c*) It generated a number of hypotheses concerning the relations among such variables as initiation of interaction, leadership, status, mutual obligations, and group cohesion. These hypotheses have served to guide much of Whyte's later work on groups and the research of many others.

Experimental Manipulation of Group Atmosphere

By far the most influential work in the emerging study of group dynamics was that of Lewin, Lippitt, and White (23, 25, Chap. 28). Conducted at the Iowa Child Welfare Research Station between 1937 and 1940, these investigations of group atmosphere and styles of leadership accomplished a creative synthesis of the various trends and developments considered above. In describing the background of this research, Lippitt noted that the issue of what constitutes "good" leadership had come to the fore in the professions of education, social group work, and administration, and he observed that, with the exception of the Western Electric studies, remarkably little research had been conducted to help guide practice in these professions. In setting up his theoretical problem, he drew explicitly on the previous work in social, clinical, and child psychology, sociology, cultural anthropology, and political science. And in designing his research, he made use, with important modifications, of the available techniques of experimental psychology, controlled observation, and sociometry. This work, then, relied heavily upon previous advances in social science and the professions, but it had an originality and significance which immediately produced a marked impact on all these fields.

The basic objective of this research was to study the influences upon the group as a whole and upon individual members of certain experimentally induced "group atmospheres" or "styles of leadership." Groups of ten- and eleven-year old children were formed to meet regularly over a period of several weeks under the leadership of an adult, who induced the different group atmospheres. In creating these groups care was taken to assure their initial comparability; by utilizing the sociometric test, playground observations, and teacher interviews, the structural properties of

the various groups were made as similar as possible; on the basis of school records and interviews with the children, the backgrounds and individual characteristics of the members were equated for all the groups; and the same group activities and physical setting were employed in every group.

The experimental manipulation consisted of having the adult leaders behave in a prescribed fashion in each experimental treatment, and in order to rule out the differential effects of the personalities of the leaders, each one led a group under each of the experimental conditions. Three types of leadership, or group atmosphere, were investigated: democratic, autocratic, and laissez faire.

In the light of present-day knowledge it is clear that a considerable number of separable variables were combined within each style of leadership. Perhaps for this very reason, however, the effects produced in the behavior of the group members were large and dramatic. For example, rather severe forms of scapegoating occurred in the autocratic groups, and at the end of the experiment the children in some of the autocratic groups proceeded to destroy the things they had constructed. Each group, moreover, developed a characteristic level of aggressiveness, and it was demonstrated that when individual members were transferred from one group to another their aggressiveness changed to approach the new group-level. An interesting insight into the dynamics of aggression was provided by the rather violent emotional "explosion" which took place when some of the groups which had reacted submissively to autocratic leadership were given a new, more permissive leader.

As might be expected from the fact that this research was both original and concerned with emotionally loaded matters of political ideology, it was immediately subjected to criticism, both justified and unjustified. But the major effect on the social sciences and relevant professions was to open up new vistas and to raise the level of aspiration. The creation of "miniature political systems" in the laboratory and the demonstration of their power to influence the behavior and social relations of people made it clear that practical problems of group management could be subjected to the experimental method and that social scientists could employ the methods of science to solve problems of vital significance to society.

Of major importance for subsequent research in group dynamics was the way in which Lewin formulated the essential purpose of these experiments. The problem of leadership was chosen for investigation, in part, because of its practical importance in education, social group work, administration, and political affairs. Nevertheless, in creating the different types of leadership in the laboratory the intention was not to mirror or to simulate any "pure types" which might exist in society. The purpose was rather to lay bare some of the more important ways in which leader

behavior may vary and to discover how various styles of leadership influence the properties of groups and the behavior of members. As Lewin put it (21, 74), the purpose "was not to duplicate any given autocracy or democracy or to study an 'ideal' autocracy or democracy, but to create set-ups which would give insight into the underlying group dynamics." This statement, published in 1939, appears to be the earliest use by Lewin of the phrase, group dynamics.

It is important to note rather carefully how Lewin generalized the research problem. He might have viewed this research primarily as a contribution to the technology of group management in social work or education. Or, he might have placed it in the context of research on leadership. Actually, however, he stated the problem in a most abstract way, as one of learning about the underlying dynamics of group life. He believed that it was possible to construct a coherent body of empirical knowledge about the nature of group life which would be meaningful when specified for any particular kind of group. Thus, he envisioned a general theory of groups which could be brought to bear on such apparently diverse matters as family life, work groups, classrooms, committees, military units, and the community. Furthermore, he saw such specific problems as leadership, status, communication, social norms, group atmosphere, and intergroup relations as part of the general problem of understanding the nature of group dynamics. Almost immediately, Lewin and those associated with him began various research projects designed to contribute information relevant to a general theory of group dynamics. Thus, French conducted a laboratory experiment designed to compare the effects of fear and frustration on organized versus unorganized groups. Bavelas (6) undertook an experiment to determine whether the actual behavior of leaders of youth groups could be significantly modified through training. Later, Bavelas suggested to Lewin the cluster of ideas that became known as "group decision." With America's entry in the war, he and French, in association with Marrow (26), explored group decision and related techniques as a means of improving industrial production; and Margaret Mead interested Lewin in studying problems related to wartime food shortages, with the result that Radke together with others (20, 36) conducted experiments on group decision as a means of changing food habits.

Summary

Group dynamics is a field of inquiry dedicated to advancing knowledge about the nature of groups, the laws of their development, and their interrelations with individuals, other groups, and larger institutions. It may be identified by its reliance upon empirical research for obtaining data of

theoretical significance, its emphasis in research and theory upon the dynamic aspects of group life, its broad relevance to all the social sciences, and the potential applicability of its findings to the improvement of social practice.

It became an identifiable field toward the end of the 1930's in the United States and has experienced a rapid growth since that time. Its rise was fostered by certain conditions which were particularly favorable in the United States just prior to World War II. These same conditions have facilitated its growth there and in certain other countries since that time. Of particular importance among these has been the acceptance by significant segments of society of the belief that research on groups is feasible and ultimately useful. This belief was initially encouraged by a strong interest in groups among such professions as social group work, group psychotherapy, education, and administration. It was made feasible because the social sciences had attained sufficient progress, by clarifying basic assumptions about the reality of groups and by designing research techniques for the study of groups, to permit empirical research on the functioning of groups.

By the end of the 1930's several trends converged with the result that a new field of group dynamics began to take shape. The practical and theoretical importance of groups was by then documented empirically. The feasibility of conducting objective and quantitative research on the dynamics of group life was no longer debatable. And the reality of groups had been removed from the realm of mysticism and placed squarely within the domain of empirical social science. Group norms could be objectively measured, even created experimentally in the laboratory, and some of the processes by which they influence the behavior and attitudes of individuals had been determined. The dependence of certain emotional states of individuals upon the prevailing group atmosphere had been established. And different styles of leadership had been created experimentally and shown to produce marked consequences on the functioning of groups. After an interruption imposed by World War II, rapid advances could be made in constructing a systematic, and empirically based, body of knowledge concerning the dynamics of group life.

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2
Issues and Basic Assumptions

An adequate understanding of the work in group dynamics requires viewing it in broad perspective. Three facts should especially be kept in mind. First, group dynamics became a specialized field of inquiry only in recent years. Its history is brief, and although its growth has been rapid, it has not yet reached full maturity. Second, group dynamics is concerned with intellectual problems that have puzzled man from earliest history. Contemporary discussions of group dynamics tend to invoke, consciously or unconsciously, one or another of the classic solutions to such problems. They are, moreover, the stuff of which social and political ideologies are made, and few people react to them with indifference. Third, group dynamics has roots in a wide range of traditionally separated fields. Contributions to the literature of group dynamics come from people with remarkably different backgrounds and training. Each author brings with him certain values which color his attitude toward groups, certain conceptions about which variables are the most important, certain beliefs about appropriate methods of research, and a particular vocabulary for describing groups and explaining why things happen as they do in groups.

In view of the youthfulness of the field and its heterogeneous origins, one must be prepared to encounter in it a wide array of values, theoretical orientations, basic assumptions, concepts, and methods. In a sense, group dynamics is in its adolescence, and like many adolescents it is testing out its capacities, trying out its newly acquired skills, but primarily seeking a coherent sense of self-identity. In this chapter we shall examine some of the basic issues which group dynamicists face in their efforts to achieve a systematic body of knowledge about groups.

Preconceptions about Groups

In the classic discussions of social and political philosophy there persist two opposite views of the relation of man to society. In the one, individual man is imperfect or even evil, and social organization is required to do things he cannot do alone or to control his aggressive, selfish, and exploitative tendencies. Without cooperation, social organization, and

groups of various kinds, man would not survive biologically; and without group standards, social values, and laws, or other means of controlling behavior, civilization would be impossible.

According to the opposite view, man is intrinsically good in what is called his "natural" condition, and social organization of all kinds is bad. The state, organization, or the group only inhibit and corrupt the individual. Groups demand blind conformity, they encourage mediocrity, they generate regressive dependency, and they cling stubbornly and irrationally to the status quo. The emotional flavor of this extreme view may be illustrated in C. G. Jung's assertion that "when a hundred clever heads join a group, one big nincompoop is the result, because every individual is trammelled by the otherness of the others" (24, 80).

Contemporary discussions of modern society reveal these two conflicting evaluations of man and groups. And, unfortunately, the term "group dynamics" has become associated in some popular writings with the first of these. For example, in his critique of "the organization man," William H. Whyte, Jr. (43) asserts that this odious creature has been encouraged by group dynamicists, who have deified the group. Group dynamicists believe, according to such critics, that everything should be done by and in groups: individual responsibility is always bad, man-to-man supervision is bad, and even individual therapy is bad; the only good things are committee meetings, group decisions, group therapy, group think, and togetherness. In short, the group dynamicists are said to hold the classic view that individual man is imperfect or impotent while the group is good. Although this extreme position has undoubtedly been advocated by some people calling themselves "group dynamicists," it does not reflect accurately the views of most people working in this field.

Anyone responsible for the management of group life must make some working assumptions about the values which will be gained or lost as a result of any particular kind of group activity. But it is the essence of the researcher's task to attempt to determine empirically what these effects are in actuality. The group dynamicist who is dedicated to research refuses to begin his investigations by assuming he knows the answers. He cannot, of course, avoid making basic assumptions of various sorts in his work, but these should merely guide his research so that he can better discover the true nature of group life. The basic assumptions held by most group dynamicists may be summarized by means of the following four propositions.

1. *Groups are inevitable and ubiquitous.* This is not to say that groups must maintain the properties they display at any given time in a particular society nor that every group which now exists should perpetuate itself, but one can hardly conceive of a collection of human beings living in geographical proximity under conditions where it would be correct

to assert that no groups exist and that there is no such thing as group membership. Even the most extreme individualists, such as the Beatniks, form groups which have their own language, heroes, hangouts, and distinctive dress. In fact, it is clear to social scientists that conformity is as extreme among such groups of nonconformists as anywhere in society.

2. *Groups mobilize powerful forces which produce effects of utmost importance to individuals.* A person's very sense of identity is shaped by the groups of significance to him—his family, his church, his profession or occupation. A person's position in a group, moreover, may affect the way others behave toward him and such personal qualities as his level of aspiration and self-esteem. Group membership itself may be a prized possession or an oppressive burden; tragedies of major proportions have resulted from the exclusion of individuals from groups or from enforced membership in groups.

3. *Groups may produce both good and bad consequences.* The view that groups are completely good or the view that they are completely bad are both based on convincing evidence. The only fault with either is its one-sidedness. An exclusive focus on pathologies or upon constructive features leads to a seriously distorted picture of reality.

4. *A correct understanding of group dynamics (obtainable from research) permits the possibility that desirable consequences from groups can be deliberately enhanced.* Through a knowledge of group dynamics, groups can be made to serve better ends, for knowledge gives power to modify human behavior and social institutions.

The group dynamicist, then, who starts with these assumptions agrees with the individualist that groups do exert powerful influences on people and that these influences may be harmful to individuals, to the group itself, and to society at large. But he maintains that cooperative action is essential for the attainment of important objectives and that groups can be beneficial to individuals and to society. Instead of concentrating exclusively on the restrictive and inhibiting features of groups, the group dynamicist advocates the scientific study of groups and of the individual's relations to groups with the belief that a better understanding of the nature of these will make it possible to devise groups and procedures better able to attain the legitimate goals of groups, to enhance the best values of society, and to enrich the personal resources of individuals.

Problems of Bounding the Field

Agreement among group dynamicists concerning these basic assumptions still leaves open many questions about best ways to proceed in the conduct of research and in the organization of findings into a coherent body of knowledge. Any particular study must make specific kinds of ob-

servations, classify these in certain ways, employ a definite set of terms in describing the findings, and propose some general principles to account for the relationships among variables. The choice made among these reflects each investigator's theoretical orientation. The student of group dynamics will quickly come to see that little general agreement has yet been achieved with respect to these issues and that, in fact, group dynamics possesses, fortunately or unfortunately, a multitude of concepts, theories, and proposals for relating group dynamics theory to more general theories of human behavior.

Those who are disturbed by this sometimes bewildering variety of approaches and by the broad scope of group dynamics have urged that the field be narrowed in some way. Three major criteria for bounding the field have been advocated.

Kinds of Groups

Sociologists were early concerned with the problem of classifying groups. It was hoped thereby to provide a way of locating any specific group under a distinct category, so that generalizations about the category would apply automatically to this specific group. Over the years, many different classificatory schemes have been proposed. A common procedure has been to select a few properties and to define "types" of groups on the basis of whether these are present or absent. Among the properties most often employed are the following: size (number of members), amount of physical interaction among members, degree of intimacy, level of solidarity, locus of control of group activities, extent of formalization of rules governing relations among members, and tendency of members to react to one another as individual persons or as occupants of roles. Although it would be possible to construct a large number of types of groups by combining these properties in various ways, usually only dichotomies have resulted: formal-informal, primary-secondary, small-large, Gemeinschaft-Gesellschaft, autonomous-dependent, temporary-permanent, consensual-symbiotic. Sometimes a rather different procedure has been advocated in which groups are classified according to their objectives or social settings. Accordingly, there are said to be work groups, therapy groups, social groups, committees, clubs, gangs, teams, coordinating groups, religious groups, and the like.

The identification of group dynamics with the study of any one of these kinds of groups, or a limited number of them, would seem to us to be unfortunate. This reluctance to restrict the field in this way does not arise from any desire to minimize the importance of such things as group size, opportunity for physical interaction, degree of intimacy, and

the rest, as determinants of what happens in groups. In fact, it is because of the importance of these features that they should not be used to define the boundaries of a field of inquiry. Such important variables should be the center of attention!

To illustrate this point of view, we may consider the matter of group size. Would it be fruitful to construct a distinct branch of knowledge concerning, let us say, the two-person group? The research problems which could be feasibly investigated with respect to such groups are almost unlimited, and an individual investigator might want to study them intensively, perhaps even specializing in this work for a lifetime. But surely there would be dissatisfaction with a body of theory which was applicable only to two-person groups. Would general principles of this theory apply equally to three-person groups? If so, why restrict the theory so arbitrarily? If not, something very important about groups would have been neglected by concentrating exclusively on the two-person group. And if it is admitted that an arbitrary distinction should not be made between two-person and three-person groups, what size can be chosen which is less arbitrary? This question can be safely answered only on the basis of actual data. Only if it were determined empirically that one set of laws holds for groups up to some critical size and that a different set holds for larger groups would there be justification for establishing a boundary at this critical point.

Surprisingly enough, on the basis of available findings one would have more reason to draw a boundary between groups of two and groups of three than at any other critical size. Years ago, Simmel (38) pointed out some of the features not shared by two-person and three-person groups (for example, the possibility of forming coalitions), and a good deal of empirical work has been conducted on such distinctive properties of triads [see, for example, Caplow (7) and Chap. 40]. Still, it is clear from this research and from such treatments of dyads as that by Kelley and Thibaut (26) and by Foa (15) that both dyads and triads can be dealt with effectively in terms of theory developed from investigations of larger groups. Moreover, as shown by Converse and Campbell in Chapter 17, conceptions of group dynamics derived from research on rather small groups can be successfully applied to groups having members numbered in the millions. Until better empirical evidence becomes available to establish a fundamental discontinuity along the dimension of size, it would be unwise to use size to define the field of group dynamics.

The same line of reasoning holds when considering all the other criteria which have been proposed. Thus, it should not be assumed without good evidence that one set of laws applies to informal groups while another applies to formal ones, or that a single theoretical system cannot

encompass face-to-face groups and organizations. Similarly, it should not be taken for granted that a special field of knowledge is required for groups having some particular objective.

One of the basic assumptions of group dynamics has been that general laws concerning group life can be discovered which will hold for such apparently different groups as a juvenile gang, the executive board of a YMCA, a jury, and a railroad maintenance crew. The essential feature of this point of view is its insistence that the various criteria which have been used to identify "types" of groups should be conceived as *variables* which may enter into a single, general theory of groups. Approaching the field of group dynamics in this way, one will do research to discover how these variables affect group life. How, for example, does the size of a group affect its cohesiveness, the degree of specialization of its activities, the formality of its organization, or the nature of its leadership? How does the objective of a group influence the motivation of its members and the nature of their interactions? In research on such variables, the investigator is equally interested in variance and invariance: it is important for him to know both what things change and what things remain the same under variations in the size of groups or in the objectives of groups.

This conception of the field of group dynamics is obviously broad, and the task of constructing an empirically based general theory might seem almost overwhelming. Needless to say, only beginnings have been made; the number of variables to be studied is large, and the number of their combinations is enormous. Because of the magnitude of the task, research carried out to date has concentrated more on some aspects than others. For this reason, one must distinguish between the domain of knowledge aspired to and the nature of completed research. The assertion that group dynamics is concerned with small, informal, primary, or face-to-face groups would be accurate only as a description of prevailing trends in research undertaken to date, and even this description would be incorrect if it implied that work has been conducted exclusively on such groups. The studies reported in this book are concerned with a broad range of groups.

Conceptual Systems

Another way of limiting the field might be according to the use of a particular conceptual system. It has sometimes been proposed that, because of the close association of Kurt Lewin with the rise of group dynamics, adherence to the theoretical approach advocated by him should be taken as the defining characteristic of the field. This proposal, however, can be rejected readily because it would arbitrarily exclude many

of the most important contributions to the understanding of group life. Lewin's general approach and specific concepts have exerted great influence on the study of group dynamics, and may be expected to continue to do so, but it is antithetical to the nature of the scientific enterprise to enforce upon a field of inquiry any particular set of concepts or theories. If group dynamics were to be defined in this way, the result would be to create a multitude of fields each of which would be dealing with groups but by means of different concepts. And, worst of all, conceptual innovation within each would be discouraged since any major change of the theoretical approach which defined a field would mean leaving the field, and setting up still another area of specialization. In principle, a field of inquiry should be defined in terms of the substantive problems it seeks to solve rather than according to the partial solutions achieved, or concepts employed at any given time.

Methods of Research

One of the more dramatic aspects of the rise of group dynamics was its demonstration that important aspects of group life can be brought into the laboratory and subjected to controlled experimentation. The originality and power of some of these early laboratory experiments on "artificial" groups was quickly recognized, and many investigators began to use similar techniques. The popularity of the laboratory experiment has led some people to identify group dynamics with such research. But this criterion for bounding the field must also be rejected. Research methods are means for accomplishing some scientific objective; each method is particularly suited for revealing certain features of nature. If a field of inquiry were defined in terms of the use of a limited method, an extremely partial view of the proper subject matter of the field would result. As a matter of fact, it is fortunate that group dynamicists have employed a great variety of methods and are constantly inventing new ones.

We must conclude that none of these ways of bounding the field is satisfactory. Group dynamics must be identified by its desire to gain an understanding of the nature of group life. Rather than attempt to bound the field in some arbitrary way, attention would be better concentrated on the central theoretical and empirical problems involved in creating such an understanding.

Theoretical Orientations

The student of group dynamics must be prepared to encounter and make constructive use of a wide variety of theoretical approaches. It is not possible here to summarize all of the many theoretical orientations

to be found in the field. These different approaches derive from all the social sciences and reflect the many schools of thought within each. As an aid to identifying points of view and "placing" particular studies, we shall list a few of the major orientations which have most influenced work in group dynamics. Then, we shall discuss some of the reasons for the great diversity of orientations and concepts and, finally, attempt to identify the more important theoretical issues which underlie all the different orientations. In reading the following list it should be understood that these are not schools of thought to which individuals belong; an investigator may be influenced, even in a single research project, by several of these orientations.

A List of Orientations

1. *Field theory* is the name given to the theoretical approach originated by Lewin (29). It derives this name from its basic thesis that behavior is the product of a field of interdependent determinants (known as "life space" or "social space"). The structural properties of this field are represented by concepts from topology and set theory, and the dynamic properties by means of concepts of psychological and social forces. For an overview of this approach reference may be made to articles by Cartwright (8, 9) and Deutsch (11). The chapters introducing each section of this book reflect a field-theoretical point of view.

2. *Interaction theory,* as developed especially by Bales (3, Chap. 33), Homans (23), and Whyte (42), conceives of a group as a system of interacting individuals. The basic concepts of this approach are activity, interaction, and sentiment, and the attempt is made to construct all higher order concepts from these terms.

3. The view that a group is a system, adopted by the interaction theorists, is also found in a wide variety of forms in other writings. These may be referred to as *systems theories.* Thus, "systems of orientation" and "systems of interlocking positions and roles" are central conceptions in the work stimulated by Newcomb (35, Chap. 5); the notion of "communication system" has been widely employed in research following the leads of communications engineering (Chaps. 35 and 36); and the conception of a group as an "open system," derived from biology, may be found in the writings of Miller (33) and Stogdill (41). Systems theories place major emphasis on various kinds of "input" and "output" of the system, and they share with field theory a fundamental interest in equilibrating processes.

4. The *sociometric orientation,* which was originated by Moreno (34) and elaborated by Jennings (25), is concerned primarily with the inter-

personal choices which bind groups of people together. The remarkably large quantity of research conducted within this orientation has been effectively reviewed by Lindzey and Borgatta (31), who point out that little systematic theory has yet resulted.

5. *Psychoanalytic theory,* which focuses upon certain motivational and defensive processes within the individual, was first extended to group life by Freud (17). In more recent years, especially as a result of the growing interest in group psychotherapy, it has been elaborated in various ways by such writers as Bach (2), Bion (4, 5), Ezriel (12), Scheidlinger (37), and Stock and Thelen (40). Of especial relevance to group dynamics are its concepts of identification, regression, defense mechanisms, and the unconscious. Although comparatively little experimental or quantitative research on groups has been conducted within this orientation, concepts and hypotheses from psychoanalytic theory have permeated much of the work in group dynamics.

6. Since groups consist of individuals, it is to be expected that conceptions of human behavior developed in general psychology will be found in work on group dynamics. And, in fact, the influence of each of the major theories of motivation, learning, and perception can be seen. Perhaps the most influential of these to date has been a broad approach referred to as *cognitive theory.* This is not, strictly speaking, a theory but a point of view which insists on the importance of understanding how individuals receive and integrate information about the social world and how this information affects their behavior. Important contributions to the study of groups have been made within this orientation by Asch (1, Chap. 10), Festinger (13, Chap. 12), Heider (21), and Krech and Crutchfield (27). A good review of cognitive theory is provided by Scheerer (36).

7. The *empiricistic-statistical orientation* maintains that the concepts of group dynamics should be discovered from statistical procedures, such as factor analysis, rather than constructed on *a priori* grounds by a theorist. Those working in this orientation make considerable use of the procedures developed in the field of personality testing. Good illustrations of this approach may be found in the writings of Cattell (10), Borgatta, Cottrell, and Meyer (6), and Hemphill (22), who have concentrated to date on ascertaining the orthogonal dimensions in terms of which groups can be characterized.

8. In sharp contrast to this last orientation is the work of a group of writers who have attempted to construct *formal models* with the aid of mathematics in order to deal rigorously with some rather limited aspects of groups. Although these models ordinarily contain some assumptions drawn from one or another for the social sciences, the emphasis is more

on formal rigor than on comprehensive substantive theory. Examples of this approach may be found in publications of Hays and Bush (20), Simon (39), French (Chap. 38) and Harary (19, Chap. 37).

Some Sources of Diversity

These, then, are some of the major approaches to the study of groups, and there are many others which could be enumerated. Although many of these appear to be in competition with one another, a careful study of them will reveal that the different theories and explanations do not actually contradict but instead augment and amplify one another. In order better to understand these various approaches and their interrelations, the reasons for the existence of so many theoretical orientations should be known.

Variety of groups and social settings investigated. It cannot be said of group dynamicists that they have confined their research to a narrow range of groups or to a limited segment of society. While it is true that they have conducted many studies on college students, they have also worked in a variety of other social settings. Thus, studies have been conducted on children in classrooms and summer camps, on military units, on committees and boards at all levels of business and government, on neighborhood groups, on voluntary groups as different from one another as labor unions and the League of Women Voters, on athletic teams, on therapy groups, on research teams, on international conferences, and on work groups in industry. In view of this great diversity it is only to be expected that different investigators will emphasize in their theorizing different phenomena and explanatory principles.

Differences in social problems motivating research. A project which is stimulated by interest in some social problem tends to concentrate on particular phenomena and social situations. An investigator who seeks to find ways of improving group efficiency may limit his attention to work groups and be especially concerned with the division of responsibilities among members, their acceptance of group goals, and the adequacy of their communication. A person who wishes to reduce intergroup conflicts may focus on sources of frustration, autistic hostility, and the transmission of stereotypes among group members. And the researcher who seeks to learn how to make groups more effective media for changing attitudes, behavior, or personal adjustment may pay special attention to group cohesiveness, social pressures generating conformity, and the emotional atmosphere created by trainers or therapists.

Number of disciplines contributing to the field. People coming to the study of groups from different disciplines bring with them the special vocabularies of these disciplines and certain assumptions about the rela-

tive importance of various aspects of group life. Thus, a political scientist may be especially interested in social power and want to account for as much as possible in terms of this variable. An economist may believe that the dominant determinants are economic resources and technological skills. A sociologist may emphasize the place of the group in an organized society. An anthropologist may stress the importance of culture. A psychoanalyst may maintain that unconscious processes and ego defenses within group members are of the greatest significance. A psychologist may insist that events occurring in groups depend basically upon the way members view the group and the relationships among members.

The various circumstances surrounding the conduct of research generate a diversity of terminology and a variety of conceptions as to what the important determinants of group life are. Many of the more obvious disparities of terminology which derive from the special languages brought to the study of groups will undoubtedly be eliminated as research techniques become more standardized and as people from different disciplines become accustomed to communicating with one another about the same research material. And much of the disagreement as to which variables are the most important will disappear when it is realized that different writers are referring to different kinds of groups and social settings.

The understandable tendency of an investigator to generalize his findings from a particular setting to "groups in general" is another source of confusion. It is a legitimate objective of group dynamicists to construct a general theory applicable to all types of groups, but this does not mean that any particular finding will be applicable to all groups in all conceivable settings. The task of deriving general principles from diverse findings is a most difficult one. It is the essential nature of a general law that it specifies what effects may be anticipated under specified conditions. The achievement of such a law demands, therefore, that great care be exercised in specifying the conditions which generate any particular findings. Only confusion will result unless one is careful to determine what limits should be imposed upon findings from a particular type of investigation or a particular type of group. Such different findings, when properly conceived, can be made to supplement one another in a comprehensive theory.

Some Basic Theoretical Issues

All the conflicting points of view in group dynamics cannot, however, be eliminated by doing away with terminological misunderstandings or excessive zeal in generalizing from particular studies. Certain fundamental questions remain unanswered concerning the best ways to pro-

ceed in research and theorizing. Many genuine differences among the various approaches lie in the different answers people give to these questions. Four questions are of greatest importance: (*a*) What is the proper relation between data collection and theory building? (*b*) What are the proper objects of study and techniques of observation? (*c*) What are the basic variables that determine what happens in groups? (*d*) How can the many factors affecting group life be combined into a comprehensive conceptual system?

The genetic development of any science seems to work progressively toward a satisfactory answer to the question of how data collection and theory building should be related. It appears that all the sciences have stemmed initially from armchair speculation; most can be traced back to a definite tradition in philosophy. For each developed science it can be said that at some point in history some people became dissatisfied with speculation and undertook to observe carefully and objectively the phenomena in question. Often the rebellion against speculation created an extreme position that ignored theory and let the data "speak for themselves." Finally, as a branch of science became more mature, theory building and data collection assumed a more interdependent relation to each other. In its advanced stage the scientific enterprise consists of developing hypotheses and theories from observations, checking these theoretical formulations by new observations and experiments, revising the hypotheses, checking these new hypotheses in new investigations, and so on over and over again. In the process, more and more comprehensive theoretical systems emerge, each part of which has a firm empirical basis.

As we saw in Chapter 1, research and theorizing in group dynamics illustrate this trend quite well. Until the beginning of the present century the study of groups was in the speculative era. Then the empiricist rebellion held sway, with most energy being devoted to "fact finding" and improving techniques of research. Finally, during the past two decades or so, group dynamics has entered progressively into the third stage of development, with more and more of its research being motivated by an interest in testing hypotheses that are "derived" from a larger body of theory. There do remain, however, genuine disagreements among those working in this third stage about the exact way in which testable hypotheses should be constructed.

Some investigators believe that such methodological problems as those of developing measuring instruments and of demonstrating their reliability should come before much theorizing. They hold that the empiricist era should not be left too rapidly for fear that premature theorizing will get the research into blind alleys. Those working in the empiricistic-statistical orientation, for example, maintain that the basic dimensions of groups should be revealed through such procedures as factor analysis

in which a large sample of reliable measurements of group phenomena are analyzed to determine homogeneous factors. The sociometrists, too, have tended to concentrate upon the development of sociometric tests before building an elaborate theory of group structure. And the interactionists have devoted energy to creating standardized systems for recording and categorizing various kinds of interaction on the assumption that theorizing will develop more rapidly as a body of standardized "facts" is developed.

In sharp contrast are those who feel that in the past the collection of data has been inefficient because so few findings can be added up to a comprehensive formulation. They prefer to let theory exert a more guiding influence in the design of research. According to this second view one should not select devices for recording and measuring before one knows what it is that needs to be studied. Until the variables necessary for developing a given theory or testing an hypothesis have been defined, these investigators hold, one has no real basis for deciding whether to use an interaction chronograph, a sociometric test, a personality test, a certain questionnaire, or some other device.

If we take the view that group dynamics is ready for the third stage of scientific development in which theorizing and data collection mutually contribute to our understanding by a process of approximation, the conflicts between these two views do not seem irreconcilable. The collection of standardized data can help formulate theory, provided the data are not collected just because the standardized instrument is available. Similarly, each new formulation of an hypothesis may call for a refinement or revision of the data-gathering instruments. And it is certainly to be hoped that investigators will not invent new procedures when existing ones are satisfactory, because such innovation only serves to make it difficult to compare findings from one study to the next.

It is apparent, then, that the way a person attempts to solve the problem of data collection and theory building will greatly influence his selection of specific phenomena for investigation and his methods of research. Thus, for example, the investigator who believes that rigorous theorizing is dangerous at the present stage of development may prefer broad exploratory field studies in order to gain a more intuitive grasp of the variables with which subsequent theorizing should deal. On the other hand, an investigator who wants to test some restricted hypothesis derived from a theory or conceptual model may desire to conduct a rigidly controlled experiment in which some limited number of variables are varied systematically. The same investigator may choose one method in one study and quite a different one in another, depending upon his judgment of how well developed a given theoretical area is.

Because of the heterogeneous background of group dynamics and its

recent history of being in the empiricist era, the phenomena selected for observation and measurement are quite diverse. As a result, different researchers may observe the same group discussion, let us say, and yet come out with widely different descriptions of what happened. One, who adheres to the interactionist orientation, will present a frequency distribution of the interactions for each of a set of categories of interaction. Another, who is primarily interested in sociometry and group structure, will relate his observations to the sociometric structure of the group. Another, who holds to the psychoanalytic orientation, will attempt in various ways to detect the prevailing emotional and unconscious determinants. And yet another, who adopts the view of cognitive theorists that perceptions and cognitions determine the events in groups, will describe the content of communication and the beliefs held by various members. If it were evident, as is often the case when different kinds of groups are being studied, that all these different descriptions actually point to different phenomena, there would be no insurmountable difficulty. The basic task would then be to determine how each of these aspects relates to the others both conceptually and empirically. But unfortunately it is not always clear to what degree these different descriptions may be different ways of talking about exactly the same things. A great deal of work remains to be done before this problem can be solved, and much will be gained by broadening the range of data collected from the same groups. Many needless confusions would never arise if interaction records, sociometric tests, interviews, and projective tests, let us say, were all employed in the same research project. It would then become evident that all of these make important contributions to understanding a particular group, but it would also become possible to discover how these various kinds of data relate to one another empirically.

The most important task for group dynamics as it works in the third stage of scientific development is to establish a generally accepted set of basic variables and concepts having clear empirical and conceptual meaning. The essential problem may be posed in this way. The basic laws of group dynamics toward which all investigators are working are to be stated in terms of functional relations of the type: $x = f(y)$; x is a certain function of y. How are we to select and name the x's and the y's in our research? In working toward a resolution of this issue it is well to keep separate two of its aspects that are rather different. One part of the problem is to isolate the actual unitary variables or dimensions that make discernible differences. The other part consists of giving these variables appropriate names and conceptual properties.

The determination of unitary variables can only be accomplished by empirical work which discovers what regularities are invariably found among measurements and observations. Factor analysis and other meth-

ods of detecting invariant empirical associations can help here. The achievement of a common language of concepts that will permit the ordering of variables into a coherent conceptual system is more difficult. If the variables are to be employed in a conceptual system in such a way that derivations can be made to new empirical data and relations, then their conceptual properties must be clearly specified. These properties indicate the place of each variable in the conceptual system and the kinds of logical or mathematical operations that may be performed upon it.

Despite the importance of conceptual systems and models, at the present time there is no single language that all theorists will agree upon. Furthermore there is little prospect that such a language will soon emerge. Fortunately, however, the conceptual systems that are currently in use are not completely incompatible with one another. In a general sense those who employ one set of terms can "understand" those who employ another, even though a dictionary of translations has not been worked out. This possibility of sensing when two differently oriented theorists are talking about essentially the same thing provides the way in which a generally agreed upon set of terms can be achieved. When two theorists can agree that they are talking sufficiently about the same thing so that the same operational definition can be given to the differing terms, then a rigorous translation can be made between the two languages and eventually the two will become amalgamated into one.

At the present time most of the theoretically oriented research in group dynamics consists of specific investigations of how two or three variables are related to one another. Thus, one study may investigate how variations in the cohesiveness of a group affect the strength of pressures on group members toward homogeneity of opinions. Another may seek to determine how variations in cohesiveness affect members' readiness to express hostility. And yet another may examine how the degree of similarity of opinions affects the cohesiveness of the group. There have as yet been few efforts to put these variables together into one coherent theoretical system. A promising lead, however, has been provided by March and Simon (32) who have developed several "maps" which show how the relations among variables reported by different investigators may be combined. These maps make it clear that a fully adequate understanding of the determinants of group life will involve a specification of a *network* of causal relationships. One of their maps indicates, for example, that the extent to which goals are perceived as shared and the number of individual needs satisfied in the group jointly determine the frequency of interaction in the group, which influences the strength of identification with the group, which in turn affects the extent to which goals are perceived as shared and the number of individual needs satisfied in the group. In other words, there is a circular chain of causal interactions.

The field of group dynamics appears to be ready for rapid progress in the construction of such maps. As attention shifts from isolated causal relations between variables taken two at a time to configurations of relations, a more penetrating understanding of the nature of group life will quickly emerge. And, as a result, the practical value of group dynamics theory will be greatly enhanced since practitioners must be concerned, not with single relationships, but with the total ramifications that stem from the modification of any particular variable.

Kinds of Methods Employed

As one reviews the literature of group dynamics one cannot help but be impressed with the great ingenuity that has been employed in designing research. The phenomena of group life have been subjected to study by means of many different techniques, and each new publication brings the report of some methodological innovation. It may be helpful, therefore, to classify the various methods which have been more commonly employed and to describe the relative advantages and disadvantages of each. No single method, as we shall see, can be termed "the best" since the choice of method must be guided by the special objectives of each investigation. The only genuine issue, then, with respect to methods is whether a particular one is optimally suited to the objectives of a research project. To settle this question one must make a detailed examination of each objective and each method.

Field Study

Under this heading are investigations which subject some existing groups to study without in any way attempting to influence them. In fact, great care is often taken to assure that the investigator's presence has as little effect as possible upon the functioning of the group. Whyte's study of street corner society and Newcomb's study of Bennington College, two of the early investigations in group dynamics, represent the field study and illustrate some of the variety that may exist within the general method. While Whyte's major objective was to record carefully the events he observed and to report them faithfully, Newcomb sought to obtain quantitative data on several variables and to discover by statistical methods how these different variables were related to one another. The product of Whyte's study was a vivid account of the nature of street corner society, a rich case study for the student of group dynamics. Newcomb's report, while giving a description of certain features of student life at Bennington, concentrated more on showing relationships among variables

(for example, how popularity was associated with the tendency to change attitudes).

Another example of the field study is given in Chapter 14, where Festinger, Schachter, and Back report the results of their study of the operation of group norms in a housing project. In this study it was found that certain attitudes and behaviors tended to be homogeneous among people living in the same court, that these were more homogeneous the more the residents reported that their friends lived in the same court, and that those individuals who differed from others in the same court tended not to be chosen by the others as friends. On the basis of these findings, the authors present the hypothesis that group standards existed in each court, that the strength of each standard depended upon the cohesiveness of the group of people living in the court, and that the price of deviation from the standard was rejection.

The major advantages and disadvantages of the field study may be seen in these examples. On the positive side, it can be employed with little disruption to the group and can provide a great variety of data. If these data are collected without bias, there can be little question as to the applicability of the findings to "real life." The information thus obtained is especially valuable in suggesting generalizations about the nature of group life. One major disadvantage of the field study is apparent in questions that must be raised concerning the typicality of the group studied. Can one, for example, safely assume on the basis of one study of a housing project that group standards will operate in the same way in such different groups as committees, families, and athletic teams, or even in all housing projects? The problem of typicality can be overcome whenever it is possible to study a representative sample of groups drawn from the universe of groups to which generalizations are to be made. But such procedures are costly and have seldom been used.

A more serious limitation of the field study is the difficulty encountered in interpreting the direction of causality from correlations. Does the correlation between the degree of homogeneity of attitudes within a court and the number of friends residing there indicate a tendency for people who like each other to influence each other toward similarity or a tendency for similar people to become friends, or both? To answer this question, Festinger, Schachter, and Back (see, for example, Chap. 14) subsequently subjected their hypotheses to more controlled experimentation in which interpersonal attraction was experimentally varied so that its effects on processes of influence could be determined. Although one often can make inferences about the direction of causality from certain configurations of correlations and from information about temporal sequences, a more direct study of the effects produced by experimentally

manipulated variables is required to establish a confident interpretation of any correlation obtained from a field study.

Natural Experiment

Because of the limitations inherent in correlational procedures, all the sciences attempt, whenever possible, to subject their generalizations to experimental test. Although the same considerations apply in research on groups, there are certain difficulties in manipulating for experimental purposes any variables which might disrupt the life of the group. Fortunately, however, it is sometimes possible to take advantage of changes which are not produced by the investigator but occur in the normal course of events. When some new policy or procedure is introduced or when some critical event occurs in the environment of the group an opportunity is given the researcher to discover what other things change as a result of this "experiment of nature."

The potential value of natural experiments may be seen in a study reported by Lieberman (30). Here, data from a field study were used to provide a base line against which to evaluate changes generated by a natural experiment in an appliance factory. In the original field study the rank-and-file workers were asked to fill out attitude questionnaires dealing with management and the union. During the next year, 23 of these workers were promoted to foremen and 35 were elected as union stewards. About fifteen months after the original study the questionnaires were readministered to the workers who had changed positions and to a matched control group of workers who had not changed positions. By comparing the attitude changes that took place among the "experimental" and "control" subjects, the attitudinal effects of moving into the job of foreman and that of steward could be determined. These comparisons showed that those whose positions were changed underwent systematic modification in attitudes while those who experienced no change of position displayed little or none. The workers who were made foremen tended to become more favorable toward management, while those who were made stewards tended to become more favorable to the union. The changes were more marked among the foremen than among the stewards. The correlation between position in the organization and attitudes toward the company and union which was found in the second round of measurements can be interpreted as indicating the influence of social position upon attitudes rather than showing that people were selected for positions on the basis of their attitudes. This interpretation is given added confidence by the fact that the data come from a natural experiment rather than simply a field study.

The major advantages of the natural experiment are that the researcher

does not impose disruptive changes in the group under study, that changes of significance can be studied, and that the direction of causality can be inferred with considerable confidence. One disadvantage is that the researcher can study only those changes which happen to take place. Other limitations reside in the difficulties usually encountered in establishing adequate experimental controls. These controls were rather successfully set up in the study reported here, but often these cannot be readily established. One general problem lies in the fact that changes introduced by nature are often a result of other factors which may, themselves, influence the resulting course of events. In particular, when any introduced change is at the discretion of some individual or group of people, great care is required in interpreting the consequences produced by this change.

The essential requirements for a successful natural experiment are that appropriate data be collected both before and after the change being evaluated and that adequate comparisons of experimental and control conditions be made. Since changes are constantly occurring in groups, it is clear that much can be learned about the functioning of groups if provision is made for the systematic collection of relevant data. In view of the great promise of this kind of research, it is surprising that so little use has yet been made of it. As group dynamicists establish more enduring relationships with various groups in society we may expect greater exploitation of natural experiments.

Field Experiments

In order to introduce greater control over the variables under investigation, social researchers have developed a technique known as the field experiment. It differs from the natural experiment primarily in the fact that now changes are introduced in the group with the explicit purpose of testing some hypothesis or evaluating the effectiveness of some innovation in methods of group management. The change is carefully designed to meet the requirements of the research problem and is put into effect under conditions which allow for controls and comparisons of properly comparable groups. Obviously, the cooperation of the group under investigation is required in order for the researcher to introduce such changes.

The experiments reported by Coch and French and by Siegel and Siegel in Chapters 18 and 13 are examples of the field experiment. In the Coch and French experiment, the research problem was stimulated by difficulties experienced rather commonly in industry when technical changes are introduced. The practice usually followed in the clothing factory where this experiment was done had been to introduce the new technical

procedure, explain it to the employees, provide a "restraining allowance" on the piece rate, and to train employees in the new method. The usual response from employees was one of suspicion, resistance, and hostility.

The researchers developed the hypothesis that introduction of new methods made the employees feel insecure, worry about whether the new piece rates would be fair, and resent the interference by management. These, in turn, resulted in the establishment of informal group standards to restrict production. The researchers reasoned further that if workers were allowed to participate in the design of new methods, they would resist less these new methods when introduced.

Several groups were selected to participate in the experiment. These groups were matched on the level of performance they had prior to the experiment and on the magnitude of change in the job which would be introduced. Three experimental conditions were established. The first, no participation, consisted of the usual procedure employed by the company. In the second, participation by representation, the employees were called together, told about the need for the change, and asked to select representatives from their group to work with the engineer in designing the new procedures. In the third, full participation, all members of the group were asked to work with the engineer in designing the new procedure.

Before the experimental treatment, all groups displayed an average rate of production which fluctuated slightly around 60 units per hour. After the new procedure was introduced, the no-participation group dropped in productivity to slightly less than 50 units and remained at this level for six weeks without any significant improvement. The group which experienced participation by representation dropped to about 45 units but returned to 60 units by the end of three weeks and leveled off at around 65 units thereafter. The group with full participation showed an initial drop to about 55 units and by the end of three weeks achieved a level slightly above 70 units, which it maintained indefinitely. At a later time, the people who had been in the no-participation group were changed to another new method by means of the full-participation procedure. These people showed this time the rapid increase in production displayed by those in the full-participation group initially.

Since the experimental manipulations were designed to test the hypothesis about participation and since it was administered so as to rule out spurious influences, we may conclude with reasonable confidence that the experimental treatments were in fact determinants of the observed changes in production.

In principle the field experiment has few drawbacks; it combines all the assets of the experimental method and of the field study. But in actuality there are many problems involved in conducting experiments in field settings. It is one thing to speak abstractly about "manipulation of

variables" and quite a different matter to put into actual practice the changes called for. In the first place, one cannot simply go to a group and introduce experimental changes; permission to do research must be obtained. Since the conditions conducive to granting such permission are not randomly distributed over all types of groups, great care must be exercised in generalizing findings from field experiments to all groups. But even after permission to conduct a field experiment has been granted, the researcher faces another serious problem. How is he to bring about the changes demanded by his research objective? Sometimes, as in the field experiment by Siegel and Siegel, the changes may be produced through slight modification of the usual procedures of management. But more often the changes require alterations in the customary behavior of key people. Can one hope, for example, to change the style of leadership of a group simply by telling the leader to behave differently? It is at this point that the social scientist most needs the collaboration of expert practitioners and people trained in the relevant professions. But, unfortunately, the development of an effective social technology depends to a considerable extent upon the accumulation of knowledge from research. Thus, at best, field experiments will have to be conducted with imperfect manipulation and control of variables until knowledge about group dynamics is more advanced. The feasibility of field experimentation should increase as work of all sorts in group dynamics progresses.

Natural Groups in the Laboratory

One modification of the field experiment has been to take natural groups from their usual setting and to place them under much more highly controlled, or artificial, conditions than is possible in the usual field experiment. To illustrate this procedure we shall describe briefly a study conducted by French and Snyder (16) on maintenance crews in the Air Force.

The broad objective of this study was to determine some of the factors which affect how much influence a noncommissioned officer actually has on the performance of his men. The factor of concern here is the degree to which the officer is liked by his men. The members of several crews at an Air Force base were administered questionnaires on which they were asked to indicate their personal feelings toward their officer. These replies provided information about the degree of liking for his officer which each man had developed in the normal course of living at the base. Somewhat later each officer and three of his subordinates participated in an experiment in which they worked together on two tasks under controlled conditions.

The first task was designed so that the noncommissioned officer would initially disagree with his men concerning the solution which the group

should give to a problem. By carefully recording the interactions in the discussion and by measuring the changes brought about by the discussion it was possible to determine how much influence the noncommissioned officer attempted and how successful he was in influencing his men. The results showed that well-liked officers, in comparison to those less well liked, attempted more to influence their men and succeeded more in doing so.

The second task was fashioned so that it would be possible to hold constant from group to group the amount of influence attempted by the noncommissioned officer. Would the better-liked officer be more successful in his influence even if he made precisely the same number and kind of influence attempts as the less well-liked officer? In order to answer this question, every officer left the room but communicated to his men by written notes asking his men to modify their behavior in certain ways. Although his men were not aware of it, the notes sent by the officer were identical in all groups. The results of this portion of the experiment revealed that a standard influence attempt coming from a better-liked officer resulted in greater actual influence than the same one coming from a less-liked officer.

It would have been virtually impossible to have determined the actual influence exerted by strictly equivalent attempts without introducing the kinds of controls possible only under laboratory conditions. And yet, by using natural groups it was possible to allow nature to generate stronger differences in interpersonal relations than is ordinarily possible in artificial groups. A major advantage of this method is that it permits the investigation of variables not easily created in the laboratory. Since its other advantages are essentially the same as those of other variations of the experimental method, we shall not repeat them here. However, one problem should be noted. The measured degree of liking of each man for his officer undoubtedly does not tell the entire story of the relationships between the two men. Thus, those groups with high attraction toward the officer may very well have been different from those with low attraction in other ways as well. The correlation obtained between liking and influence may conceivably, therefore, reflect the operation of some of these associated features rather than liking itself. Whenever "nature" is allowed to generate independent variables, this problem of interpretation will arise.

Artificial Groups in the Laboratory

The desire to isolate variables and to manipulate them under as controlled conditions as possible has led social researchers to create groups in the laboratory and have then function under conditions created by the

experimenter. It will be recalled that the early work by Sherif and by Lewin, Lippitt, and White made use of groups created for research purposes. Furthermore, these investigators went to great pains to subject the groups to conditions which they set up. Over the succeeding years, many extensions and elaborations of this basic method have been made. As efforts have been directed toward exercising more and more control over variables, the conditions under which groups function in the laboratory have become increasingly "artificial," not resembling any conditions in "real life." Thus, in order to rule out uncontrolled effects of previous acquaintance among members, groups have been formed of strangers. And, in order to study various effects of communication among members, messages have been restricted to written notes so that these could be intercepted surreptitiously and previously prepared ones substituted. Probably the most extreme degree of control has been exercised in experiments where subjects are led to believe that they are members of a group with whom they can communicate only over an electronic intercommunication system but where, in actuality, they listen to a tape recording of a prepared interaction (see, for example, Chap. 4). In all these experiments, the intent is not to create an exact replication of some type of circumstance found in society but instead to discover the effects produced by variations in abstractly defined variables.

The principal advantages of conducting experiments on artificial groups under laboratory conditions stem from the possibilities of controlling variables. If on the basis of research in field settings or on natural groups there remain questions about the direction of causality or about which of several simultaneously varying conditions are responsible for observed effects, research on artificial groups under laboratory conditions can provide much clearer answers. Only deficiencies in the experimenter's skill or ethical restraints prevent the manipulation of any variable of significance to the life of the groups, and the limitations of the method reside in these very considerations. The frequently voiced criticism that laboratory experiments are "artificial" is not accepted as valid by those conducting such research because only through such artificiality can commonly associated variables be studied in isolation. And, in rebuttal to criticisms of artificiality, proponents of this method point out that experiments in the physical sciences are at least as artificial, in this sense, as any conducted in group dynamics.

A major difficulty remains, nevertheless, in generalizing the results from laboratory research to groups in society. In the laboratory experiment only a few variables are manipulated at any given time while all the remainder are held constant at some level. Until a very great amount of research is completed it will not be possible to know the effects produced by all the possible combinations of variables. For this reason, caution is

required in generalizing findings to situations where conditions exist which have not been investigated. Thus, to cite an obvious example, most laboratory experiments have been conducted on groups with an extremely short history. If a group's "age" influences the effects of other variables, it is safe to generalize from laboratory experiments only to "young" groups.

In an effort to overcome this difficulty a technique, known as simulation, has been introduced into some laboratory experiments. Here the purpose is to simulate real, or potentially real, conditions in which actual groups might find themselves. Thus, conditions might be created to resemble a bomb shelter or a space ship. Or, groups might be formed and placed in a building designed to simulate an aircraft interceptor facility. Each experimental team would be provided all the electronic equipment available to such real teams. Then, various programs of messages would be introduced so as to resemble various circumstance which real teams might face. In this way it is possible to determine, for instance, what difficulties such teams working under real conditions might encounter and to test out various methods of overcoming them. The possibilities of simulation are almost endless but, as noted by Guetzkow (18) in describing the possible use of simulation in the study of international relations, little use of it has yet been made except in certain military and business settings. Simulation is best suited for "developmental research," where the objective is to determine the effects that may be expected from combining a large number of variables in a single situation. To what extent the gamelike qualities of such settings affect the ability to generalize to real life has not yet been established.

Conclusions

It would be a mistake to maintain that any one of these different kinds of methods is the best. Findings and hypotheses derived from a study employing one method should serve to guide subsequent studies employing each of the other methods. Thus, field studies and natural experiments provide tentative conclusions which can be subjected to more rigorous test by more controlled experiments. And, at the same time, field studies and field experiments are needed to determine whether generalizations drawn from artificial situations and artificial groups can be safely applied in natural settings. The genuine issues of methodology deal essentially with tactics: What is the best method for a particular objective? Given a certain stage of development, how much effort should be devoted to general exploratory studies and how much should be directed to control of variables and precise quantification? These issues are matters of judgment, and only experience can determine which resolutions are the best.

Group Dynamics and Society

All branches of science in the modern world are intimately related to society, as the construction of the atomic bomb so dramatically demonstrated to the physical scientists, but group dynamics has an especially close relationship. It, of course, shares with the natural sciences the fact that its findings may be used for good or evil purposes. It differs from them, however, in that its research materials are human beings and social groups. This difference has both technical and ethical consequences. The group dynamicists, for example, cannot keep groups of people "on tap" the way a chemist keeps a supply of chemicals on his shelf or the way a biologist maintains a colony of experimental animals. Nor can he take a group of people and subject them to all sorts of conditions just to find out what happens. And the practical outcome of research in group dynamics is not a piece of hardware which can be installed by following a manual; it is instead a set of principles concerning the way people should arrange group procedures if they want to accomplish certain results. The methods and products of the group dynamicist, in short, constantly and inevitably involve him in society whether he wishes to be or not.

Some troublesome problems stem from this fact. We shall now briefly consider three aspects of work in group dynamics which are especially dependent upon its relations with society: (*a*) formulating research problems, (*b*) conducting research, and (*c*) converting knowledge into practice.

Formulating Research Problems

Many factors influence the investigator's choice of a research problem and the way in which he formulates it. His disciplinary background and his general theoretical orientation, as we have seen, will affect his views of what variables are important, what kinds of data should be collected, what methods are most appropriate, and what concepts should be employed in his theoretical formulations. But, in addition, it must be recognized that he conducts his research in a particular society and is influenced by his participation in that society. Thus, for example, he holds certain values and is unlikely to design a research project whose major purpose would be a better understanding of how to undermine these values. And, since research costs money, he is dependent upon the opinions of society's financial gatekeepers as to what problems are worthy of support. Finally, since his research must be conducted on groups of people, he can only investigate problems which these groups will allow him to study. It should be apparent, then, that the group dynamicist cannot formulate his research problems in a social vacuum, that the topics

chosen for research are highly dependent upon the society in which he works. And, as we discovered in Chapter 1, the field of group dynamics has flourished only in certain countries.

These influences can be clearly seen in the accumulated research in group dynamics. It can hardly be an accident that so much research was conducted on the problem of conformity in the United States during the era of the McCarthy controversies. Nor is it an accident that in democratic societies so much emphasis has been placed on the problem of leadership. Similar influences can be detected in the great amount of work on group efficiency, the group as a source of resistance to change, and the consequences of groups on mental health.

We should not assume, however, that the group dynamicist exerts no influence upon the way society views the role of groups in society. To a considerable extent the generous financial support given to research in group dynamics by the military establishment, industrial organizations, and governmental agencies concerned with mental health is a result of the demonstration by group dynamicists that groups exert profound influences on matters of concern to these agencies and that research on groups can be productive. Furthermore, as group dynamicists have worked with professional people and practitioners of various kinds they have helped these people see new ways in which research on groups can be ultimately beneficial to them.

Because of the close interaction between the researcher in group dynamics and those segments of society concerned with improving social practice, it is important that the nature of the researcher's contribution be clearly understood. If research in group dynamics is to be of genuine help in improving social practice, it must be conducted in such a way that it creates a significantly new understanding of the nature of group life. The achievement of this kind of understanding requires the group dynamicist to approach social phenomena in a way essentially different from that of the practitioner and to concentrate on a problem, attacking it from many different angles, until he understands it—not merely until the need for some particular administrative action has passed. A too great or too impatient concern for reaping the practical fruits of research will only reduce the chances of reaping any.

In examining the relations between the researcher and the practitioner, one encounters a disconcerting paradox: the very thing which makes the social researcher uniquely valuable causes him the greatest difficulty in gaining from practical-minded people the kind of support required to be valuable. The competent researcher differs from the competent practitioner mainly in the way he formulates problems and conceptualizes social phenomena. It is in this peculiar unconventionality that the group dynamicist's practical value lies. But it is here, too, that his difficulties arise.

Lewin (28) illustrated this requirement by suggesting that in order to achieve a fundamental understanding of minority problems one would have to investigate such apparently different matters as the interrelations between the blind and seeing, between adults and children, as well as between Negroes and whites, or Catholics and Protestants. Minority problems, he asserted, should be viewed as but one example of the effect of group status on group living. If he is correct, those concerned with improving the lot of Negroes, the blind, or children have a stake in a coordinated program of research upon the abstract problem of group status, as do those concerned with the welfare of the professional woman, the personnel department or the research staff in a business organization, the clinical psychologists in a mental health clinic, or the social scientist in the world of science.

It is for these reasons that the group dynamicist aspires to construct a general theory of groups and resists any attempt to define group dynamics in terms of some particular kind of group or social problem. Group dynamics will achieve such a fundamental view of group life, and make its major practical contribution to society, to the extent that its research problems are formulated according to the dictates of the phenomena themselves and in keeping with the requirements of theory building. Such a course means, however, that the group dynamicist will have to investigate in an integrated fashion phenomena and problems which to the practitioner may appear unrelated to one another. Moreover, the ultimate value of his research will be in fields of practice which are customarily viewed as having nothing to do with one another.

Conducting Research

In the actual conduct of research the group dynamicist is bound to exert influences of one sort or another upon the groups he studies. Even in the field study, where he attempts to minimize this influence, the researcher establishes relationships which are bound to make a difference. For example, if he interviews or asks questions, he directs attention to certain phenomena, and people are unlikely to react to these in the same manner after his investigation. But more importantly, the question must be raised as to what will be done with his findings. If he learns anything of vital importance about the group, members will have a legitimate interest in knowing how this information is to be used. Since this question cannot be side-stepped, the researcher must be clear from the outset what understanding, implicit or explicit, exists concerning the role of his research in the administration of the group.

When the research design calls for experimental manipulation of variables, the investigator makes especially heavy demands on the group. Suppose, for example, that he wants to investigate the effects of different

degrees of participation by group members in decisions of importance to the group and that he wants to do this by conducting field experiments on the locals of a labor union. Why should a union grant permission to introduce variations in the way it makes decisions? If the customary practice is for decisions to be made by the entire membership and the experiment calls for centralizing decision-making, then the experimenter may be asking the union to go against a strong democratic ideology. If the prevailing practice is for a few people to make decisions for the group and the experiment requires total participation in decisions, then the experimenter may be threatening the political power of this ruling clique. In any case, if the experimental changes are significant, the experiment is bound to be disruptive or even threatening. To justify such effects there would have to be some compensating gain from the research for the participants. In attempting to get the cooperation of groups the investigator appears to have two things to offer. He may try to persuade the group, or those in power to give permission, that they will benefit from sharing in the knowledge resulting from the experiment, or he may promise that the changes introduced by the experiment will produce consequences of immediate value. Although both considerations may, under certain circumstances, be both justified and persuasive, it should be evident that experiments can be conducted only on groups where conditions foster cooperation with the experimenter.

The problem of gaining access to the phenomena he wants to study creates certain ethical problems for the group dynamicist. Nearly everyone would agree that experiments, whether in the laboratory or in the field, should not be conducted when there is a possibility that harm might befall the subjects. But who is to decide what "harm" is? And, who can legitimately grant permission for the conduct of experiments on groups of people? Although few would object to conducting research which has been approved by all participants on the basis of full knowledge of possible outcomes, the gaining of such approval sometimes would make it impossible to conduct the kind of research required. Is it legitimate for the management of a group to grant permission for research on the group? Some people would answer in the affirmative since management is constantly making decisions and instituting procedures that affect all the members, but others have expressed the opinion that no one has the right to authorize experimentation or data collection on other people. An example of the complexity of the issue is provided by the controversy that arose a few years ago when it was revealed that recordings had been made of jury deliberations without the knowledge of the jurors but with the permission of the judge. Despite the fact that responsible lawyers believed that such research would contribute ultimately to strengthening the jury system, serious question remains as to whether concealed recording of data is ever justified.

The related problem of the use of deception arises in many investigations. It is especially difficult because there is good reason to believe that if people know what the researcher is attempting to find out, this knowledge may influence the results of the research. The problem may be illustrated by the research of Festinger, Riecken, and Schachter (14) who wanted to study various effects of a dramatic disconfirmation of beliefs held in common by a group of people. They discovered a small group which would provide an unusual opportunity to study these effects, since the members were prophesying the end of the world. The researchers wished to avoid exerting any influence on the group and felt that they could not candidly reveal their interests to the members. They decided, therefore, to join the group in the guise of believers. In this way they gained access to the phenomena they wished to observe. The ethical issue here is whether they were justified in employing this deception, even though they exercised great care in reporting their findings to conceal the identity of the group and the individuals involved. The same issue arises in a more general form in many laboratory experiments (see, for example, Chaps. 10 and 15) where subjects are led to believe that others disagree with them concerning some matter of fact or opinion. Here the deception is employed as a means of manipulating a variable. Is this deception justified, even when the true nature of the experiment is explained to the subjects immediately after the experiment?

Obviously, universal consensus on issues like these cannot be achieved, but the researcher must be aware of these ethical problems and be prepared to forego research whenever serious questions of ethics are involved. It is clear that research on variables that are important to people and to society requires skill, diplomacy, and high ethical standards. Intellectual ability and a capacity for abstract thinking, which are requirements in any science, are not enough.

Converting Knowledge into Practice

Group dynamics is dedicated to advancing a basic understanding of group life. As noted above, if it is to succeed in this endeavor, its research problems must be formulated according to the demands of abstract theory rather than immediate, practical needs. Despite the different ways in which the researcher and the practitioner approach groups, the accumulated knowledge of group dynamics should provide a storehouse of information useful in the management of group life. Much has yet to be learned, however, about the most effective ways of converting basic knowledge into improved practice.

The group dynamicist can, of course, influence social practice in many ways. He can, for example, provide facts of value to those who take social action. His techniques for collecting data, such as the sociometric test,

interaction recording, and interviewing, can be fruitfully employed as a tool for improving the efficiency of group functioning. And his concepts, such as cohesiveness, structure, and role, can help the practitioner think about events taking place in the groups with which he works. The teaching of group dynamics to people not concerned with research but with practice is based on the assumption that a knowledge of findings from research will aid in the practical affairs of groups. And, there can be little doubt that social practice has benefited from having an increasing number of people acquainted with the findings of research on groups.

Still, there is reason to believe that new procedures will be needed before optimal use of knowledge in group dynamics is achieved. As basic knowledge has accumulated over recent years it has become increasingly evident that findings of basic research cannot simply be taken from the storehouse and put into use. Principles have to be converted into practices and procedures. There is a great need, in the social sphere, for an explicit attention to the process of invention and developmental research. The problem of converting basic knowledge into social practice has not been that those working with groups have been timid or conservative when it comes to trying out new methods of management. The problem is that neither researchers nor practitioners have recognized sufficiently that a great deal of hard work must go into the process of making basic knowledge useful. If the experience of natural science and engineering is any guide, a long period of developmental research—of pilot runs, evaluation, and redesign—is required before a dependable product can be attained. All too often in the world of social management we put into operation any procedure that is new and plausible without any test runs or evaluation of results. It is to be hoped that in the coming years we shall witness the rise of a new specialty which is concerned directly with the challenging problems of how to invent, on the basis of firm general principles, new techniques of group life and how to evaluate their actual consequences before they are put into general practice.

Summary

Group dynamics is a relatively young field, and it displays the characteristics of youth. It is experiencing rapid growth and seeking a sense of identity. The issues within the field can be better understood if viewed in this perspective.

The major issues of group dynamics concern the following matters: (*a*) preconceptions about the values to be gained or lost through group activities, (*b*) ways in which the field of group dynamics should be distinguished from other social science specializations, (*c*) the best theoretical orientation to employ in studying groups, (*d*) the use of research methods which are most appropriate to research objectives, and (*e*) the

relations that should be maintained between group dynamics and society.

The student of group dynamics, we have suggested, should not bring to his inquiry any preconception that groups are universally "good" or "bad." The more appropriate assumption is that groups may either facilitate or inhibit the attainment of desirable social objectives and that the task of research is to gain an understanding of the nature of group life so that desirable objectives may be more rationally sought by means of knowledge produced by research.

Although research which is properly labeled as "group dynamics" has tended to concentrate on small, informal, or primary groups, it would seem unwise to define the field as the study of any particular "type" of group. Similarly, it would be unwise to bound the field according to the use of a particular kind of research method or the adherence to a single theoretical orientation. No satisfactory criteria for bounding the field have yet been established, and group dynamics can be identified only by its central objective of gaining an understanding of the nature of group life.

The study of group dynamics has been guided by a great variety of theoretical orientations. Although this diversity of approaches and conceptual schemes may at times seem confusing, it reflects the youthfulness and vigor of the field. Efforts to achieve a coherent body of knowledge about groups must arrive at satisfactory answers to four questions: (*a*) What is the proper relation between data collection and theory building? (*b*) What are the proper objects of study and techniques of observation? (*c*) What are the basic variables that determine what happens in groups? (*d*) How can the many factors affecting group life be combined into a comprehensive conceptual system? As work in group dynamics continues, progressively more satisfactory answers to these questions may be expected.

Investigators in group dynamics have displayed great ingenuity in devising methods of research. It would be a mistake to insist that any one of these is "the best." Each has advantages and limitations, and the basic problem is one of selecting the method most appropriate to the research objective and the stage of theoretical development in each problem area.

The methods and products of the group dynamicist constantly and inevitably involve him in society whether he wishes to be or not. The intimate relation between group dynamics and society is reflected in the formulation of research problems, in the conduct of research, and in the conversion of basic knowledge into practice. With respect to each of these matters the group dynamicist is influenced by and, in turn, influences society. In doing his work, therefore, the group dynamicist must not only possess intellectual ability and the capacity for abstract thinking but also social skill, sensitivity, and high ethical principles.

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Part Two

GROUP COHESIVENESS

3

Group Cohesiveness: Introduction

One of the major perplexities confronting those who want to understand groups and to work with them effectively is how to explain the great differences in "groupness" that distinguish groups from one another. Why is it that the attendance of one group is so irregular as to result in its slow death while the attendance of another group with similar activities and leadership remains high? What makes a group "healthy" so that its members work harder, make more sacrifices for the group, more readily extol its virtues, seem happier together, interact more often, and agree with one another more readily than do the members of a dying organization? Symptoms such as these are observed every day, but an adequate explanation of the nature and origin of group cohesiveness is not readily at hand.

A suggestive aid to thinking about this problem is the designation of two syndromes of symptoms, by analogy to medicine, as "healthy" and "unhealthy." Such a dichotomy, however, provides little understanding of the determinants of group health, nor does it help account for the wide differences of behavior which may exist among members of the same group. How can we account for the fact that a group which for a long time has been barely able to hold its members suddenly becomes more attractive? What factors lie behind the observation of union officials that the solidarity of a group of workers often increases after they have been out on strike? What can account for fluctuations in an athletic team's spirit which seem to be unrelated to wins or losses? What might be the reasons that a club has good participation one year but only indifferent interest the next? And why is it that one Boy Scout attends meetings of his troop spasmodically while a neighbor boy attends the meetings of the same troop regularly and remains an ardent member for years?

A first step toward answering questions like these is to develop descriptive concepts which will refer to reasonably homogeneous phenomena. What do we mean intuitively when we speak of the cohesiveness of a group? A number of meanings quickly come to mind. We think, for example, of a group that has a strong feeling of "we-ness," meaning that the members are more likely to talk in terms of "we" than "I." We think, too, of a group where everyone is friendly or where loyalty to fellow-members

is high. A cohesive group might be characterized as one in which the members all work together for a common goal, or one where everyone is ready to take responsibility for group chores. The willingness to endure pain or frustration for the group is yet another possible indication of its cohesiveness. Finally, we may conceive of a cohesive group as one which its members will defend against external criticism or attack.

All of these characterizations have a degree of reasonableness. A few of them have led to useful operational definitions so that measurements could be made describing the amount of the characteristic present in a given group at a specific time. And, it has been shown that the results of these measurements, under specified conditions, "make sense." For example, in the experiments by White and Lippitt (Chap. 28) on autocratic, democratic, and laissez-faire atmospheres in boys' clubs, several kinds of observations were recorded which might serve as operational definitions of one or another of the intuitive meanings described above. They noted the relative number of remarks in which "we" *vs.* "I" was used by the boys. They also recorded the number of friendly comments, the statements expressing discontent, and the frequency of group-minded remarks. On each of these measures it was found that the groups with an autocratic climate had developed more friction among the members than had those with a democratic atmosphere.

The comparative number of friendship ties existing among the members within different groups has been used by some to measure group cohesiveness. For instance, Festinger, Schachter, and Back (Chap. 14) determined the cohesiveness of the various courts in a housing project by asking the residents to name their friends in the settlement and then determining the proportion that "in-own-court" choices were out of the total number of selections made from the entire community. Dimock also developed a "friendship index" for small groups (6, 118). This is the ratio of the number of selections made within one's club, when each member is asked to name his 10 best friends, divided by the number which could possibly have been chosen from within the club. Both studies show that scores on these measures can be used to differentiate groups which are also unlike in other important respects.

The degree to which the members share the same norms as to how one should behave or what one should believe has sometimes been taken as an indicator of cohesiveness (see, for example, Coch and French in Chap. 18). In another study, French (11) found that organized groups were less susceptible to disruption caused by a member's departure from the group than were unorganized groups. This difference might be taken to indicate variations in cohesiveness. The attractiveness of the group was measured in yet another way by Schachter in the laboratory experiment described in Chapter 15. He employed three questions, asking subjects if

they wanted to remain as members in newly formed clubs, how often they wanted the group to meet, and whether they wished to ask others to stay in the group. Here again groups varying on these measures were predictably different on certain other variables.

An ingenious innovation in the measurement of cohesiveness is a picture-projective test developed by Libo (27). The device is based on the assumption that the immediate environment influences the feelings of the members, and that these will, in turn, be reflected in stories written about the pictures while the respondents are in a group meeting. It has been shown that the test distinguishes rather well between subjects who, when subsequently left free to choose, remain in the group and those who leave.

In studies of more enduring groups, like a business firm or a formally organized club, it is usually possible to get measures of such things as absenteeism, turnover, or payment of dues. These have often been used as rough indicators of the degree to which an institution is attractive to its members.

A careful analysis of this sort has been conducted by Mann and Baumgartel (28) who studied the relation between absences and various attitudinal measures of satisfaction among employees of a public utility. They found, in general, statistically significant relations between the average rate of absence within a subpart of the company and the degree of satisfaction among members of that group with respect to supervision, work associates, and the nature of the job. One striking finding that is particularly relevant here has to do with the men's perception of the solidarity of their group. A large proportion (62% for groups of white-collar men) of the members of groups with very low absence rates indicated on a questionnaire, "Our crew is better than others at sticking together." Only 21% of those in groups with high absence rates gave this response. Similar analyses show that supervisors who strengthen the group by group discussions and group decisions have fewer absences.

The use of these kinds of behavioral indicators of group cohesiveness has one difficulty noted by Hill and Trist (20). Absence is not withdrawal from membership in the group, even though it is a temporary withdrawal from participation in its activities. We may reasonably expect that a highly attractive group will usually have a high rate of participation in its activities; but this need not be invariably so. A member who is attracted to a group may stay away from it because of illness, competing obligations, or the need to avoid tensions arising from participation in the group, without having his enthusiasm for membership reduced, while a member in a group who is not attracted to it may faithfully take part in its activities without any increase in his desire for membership. In a study of clerical workers, as yet unpublished, it was observed by Jackson that

employees who were most competent more often were absentees than those who were less competent. Perhaps the more competent workers were so secure concerning their relations with the company that they could freely stay away from work whenever it seemed necessary.

Obviously several different things are included in these intuitive operational descriptions of group cohesiveness. At least three rather different meanings may be distinguished: (*a*) attraction to the group, including resistance to leaving it; (*b*) motivation of the members to participate in group activities; and (*c*) coordination of the efforts of members.

It is highly unlikely that a single concept can be developed which adequately contains all three of these meanings. We propose to limit the concept of cohesiveness to refer to the phenomena of attraction to the group. Phenomena related to the level of motivation, we believe, are better treated under the concept of *group goal* (see Part Four). The coordination of efforts in a group is a complex process which may be broken down into such matters as the assignment of functions (Part Five), the exertion of influence (Part Three), and the structural organization of groups (Part Six). All of these properties of groups are important determinants of the "healthy" functioning of groups. It is desirable, however, to employ several different concepts to describe their various aspects.

Refining the Concept of Cohesiveness

The term *cohesiveness* refers to phenomena which come into existence if, and only if, the group exists. A person must have some notion about the properties of a given group before he can react to it favorably or unfavorably. His attraction to the group will depend upon two sets of conditions: (*a*) such properties of the group as its goals, programs, size, type of organization, and position in the community; and (*b*) the needs of the person for affiliation, recognition, security, and other things which can be mediated by groups. Both the nature of the group and the motivational state of the persons involved must be treated in any adequate formulation of group cohesiveness.

It will be recognized that such a formulation is identical with more general conceptions of human motivation which are widely accepted. The valence, or attractiveness, of any object or activity is a function of the needs of the individual and the properties of the object. For example, how attractive a given serving of food will be to a person depends upon how hungry he is and what kind of food it is. In the conception of group cohesiveness proposed here, the group is treated as an object in the life space of the person. Its valence for any given person, then, depends upon the nature and strength of his needs and upon the perceived suitability of the group for satisfying these needs.

With the help of such a formulation several interesting derivations become possible. If, for example, a person joins a group with the expectation of fulfilling certain personal needs, but these needs change while he is a member, the attractiveness of the group will decrease for him unless the group is able to fulfill the new needs equally well or better. It is possible, of course, for an individual's needs to be modified through experiences in the group. Indeed, some organizations deliberately attempt to change the needs of their members. Such organizations often "lure" members into joining by promising certain inducements, and then work on the member to develop other needs and interests which are considered more important to the group. Just how these conversions of motivation take place, though, is far from clearly understood.

Broad social conditions may modify the needs of large segments of the population more or less simultaneously. When such changes take place, we should expect the attractiveness of certain types of groups to be affected accordingly. Thus, it has been suggested that the postwar increase in church membership and attendance results from popular anxieties and insecurities brought about by the advent of the atomic age.

The formulation of cohesiveness proposed here also implies that any reduction in the ability of the group to meet the needs of a member will decrease the attractiveness of the group for him. Such a change might be brought about by alteration of the group's properties through modifying its program, the nature of its membership, its internal organization, or its emotional atmosphere. By similar reasoning, of course, we should expect the attractiveness of a group to be increased by any changes in the group which enhanced its ability to meet the needs of members.

It should be noted that the ability of a group to meet the desires of an individual may not be totally dependent upon occurrences within the group itself. Any group exists in an environment, and the attributes which a person sees in a given group are determined for him in part by the position of the group in its environment. If, for example, the group has high prestige in the community, it will be seen as having the ability to fulfill needs for status which a group of low prestige does not possess. This is a quality of the group which it derives from sources outside it. Or, the group may provide access to certain ends which are not available to the nonmember.

Changes in an environment, and how these changes determined the ability of voluntary organizations to meet members' needs, has been vividly described by Eisenstadt (8). The changes he observed were those in Israel immediately after it became a nation. While the country had been a British Mandate, most organizations had had certain typical characteristics: they were closely related to various social movements or political parties; they performed functions of vital importance within the community such as guard duty, defense, medical aid, social welfare, educa-

tion, and agriculture; they were connected with the social and political centers of the government; and they conceived of themselves as realizing the ideal of national rebirth. Thus, most of the groups enabled their members to participate in the civic life of the country and to feel that they were contributing to its development. Moreover, through participation in these groups their members received recognition and prestige in the community. When Israel became a nation there was rapid centralization of power and services in the hands of the government and an accompanying increase in the value placed upon power. As a result of these changes, voluntary associations lost their former usefulness and members' interest in active political and social life dwindled. Instead of being concerned with social action, voluntary associations in the new nation became pressure groups, philanthropic societies, or social clubs, all of whom had little connection with the government. The new voluntary groups provided little fulfillment of needs for action and achievement and primarily helped members to understand social or political problems, to promote points of view or to encourage sociability.

The effects of the environment on the nature of groups were studied in quite a different way by Festinger and his co-workers (Chap. 14), who were interested in the physical factors leading to the formation of groups in a small community, and the causes of increased or decreased attractiveness of those groups for their members. It was found that the distance one lived from others in the project, and the fortuitous arrangement of sidewalks, mailboxes, stairways, and other similar matters which controlled one's likelihood of having contacts with others, were important determinants of the persons with whom one made friends and thus of the formation of social groups. It was also found that when the neighborhood groups fulfilled the needs of the members they were more cohesive than when they did not. Those people who had more satisfactory group memberships were also more satisfied with other aspects of community life.

Assuming, then, that the valence of the group is a function of the individual's needs and the properties of the group, we can briefly summarize with the statement that the attraction to the group is a function of the resultant forces acting on the person to belong to the group, regardless of whether he is or is not a member. The *cohesiveness* of a group is the resultant of all the forces acting on all the members to remain in the group. This formulation, it is clear, requires that we must be able to identify who are members and who are not.

Sources of Attraction to the Group

Why do people join or remain in a group? It is possible to identify two major sources of attraction: (a) the group itself is the object of the need,

and (*b*) being in the group is the means for satisfying needs lying outside the group.

The group itself is the object of the need. One of the most obvious reasons for joining a group is that one likes the people who are in it. In some groups this may be the only source of attraction, such as a gathering of neighbors who get together for a "visit" just because they enjoy one another's company, and not necessarily because of the fun of talking or an interest in the topics discussed. More often, however, this attraction to the people who are in the group is present along with interest in the activity, or the programs of the organization. Thus, a man may join a golf club both because he likes the game and because he likes the people he meets there. It is possible, of course, that he could have joined the club only in order to play golf, feeling quite neutral or even having a mild dislike for the habitués of the place.

The group may be the object of the need, then, either because of an attraction to the people or because of a liking for the activities available in the group, or both. An interesting special case arises when we consider the possibility that a person may join a group because he places a high value on its purposes—perhaps on such goals as combating prejudice, getting out the vote, or improving local business practices. Here, the group is attractive only because he feels that the goal of the group is a worthy one. If he comes to believe that they will never achieve this end, perhaps because of inefficiency in the group, poor leadership, friction, lack of money, or any of a number of other reasons, he will become less attracted to it. The valence of a group, when its goals are the primary source of attraction for a member, is equal to the strength of the attractiveness of the group goal, times the probability that the group will reach this goal.

Groups as a means for satisfying needs outside the group. In many instances a group may be attractive to a person primarily because it is a means to reaching some goal which exists outside the group. Membership is a path to something desirable in the environment. An important reason for joining a sorority on a university campus, for example, is the prestige that the girls obtain in the college community by belonging to that group, according to findings reported by Willerman and Swanson (47). Similarly, Rose (32) states that the major benefit that the members say they derive from belonging to a large union "local" is that it obtains higher wages and job security for them. In both of these instances, the member values the group because it helps achieve a goal which exists outside the group.

It has been emphasized by some that a group may become a haven for protection from a threatening environment and thus become a means to satisfy the need for security. Grinker and Spiegel (15) have described

the increase in cohesiveness among the members of a bomber crew when they become aware that each person in the plane was dependent upon others for the security of them all. In an ingenious program of research, Schachter (36) studied the effects of experimentally induced states of anxiety on the desire to be with other people (which he calls "affiliative tendencies"). His results show clearly that a state of anxiety leads to the arousal of affiliative tendencies. In attempting to account for the results of this research, Schachter concludes "it appears theoretically rewarding to formulate this body of findings as a manifestation of needs for anxiety reduction and of the need for self-evaluation; that is, ambiguous situations or feelings lead to a desire to be with others as a means of socially evaluating and determining the 'appropriate' and proper reaction" (36, 132). When people are anxious, therefore, they may be attracted to participation in groups which help them to reduce their anxiety, but little is yet known about the processes which arise in groups when members are anxious. An incidental finding of considerable interest from Schachter's research is that people who were first-born or only children in their families respond to threatening situations with greater anxiety and thus show greater affiliative tendencies in such a situation than do people who had older siblings.

The principle of "functional autonomy of motives" proposed by Allport (1) suggests that the distinction between groups as the object and the instrument of need satisfaction is not absolute. Allport has pointed out that certain behavior which was originally instrumental in reaching some further goal may become a goal in itself and persist after the original goal no longer exists. It appears that a similar phenomena may be found with respect to group membership. A person may join a group in order to achieve some external objective, but remain in the group long after the original objective is no longer relevant. Group membership, which was only instrumental at first, has become an end in itself. Tsouderos (44), from his studies of voluntary organizations, proposes that persons who have highly specialized roles in an organization see their memberships as means to an end, whereas those who have no special responsibilities are more likely to view membership as an end in itself.

The source of a group's attractiveness for a person with one type of need will be quite different from the source for an individual with a different need. In Chapter 6, Jackson shows that attraction to work groups among staff members in a social agency originated in their appreciation of benefits from doing professional work, but not at all from admiration for the people in the agency. Ross and Zander (33) found that the attractiveness of a business firm was more strongly affected by employees' ability to perform their jobs well and by the recognition they received for good work than by the number of friends they made. An organization

may be a source of satisfaction for one type of need and not a source for the satisfaction of another type, so that attraction if any is based upon what the group supplies. In a laboratory experiment using discussion groups, Wolff (48) observed that members in a group where the chairman approved of their remarks based their liking for the group on the evident worth of their contributions, while members of groups where the chairman devalued their comments liked the group because of the persons in the group and the interesting topic discussed. The attraction of members for one another, as Newcomb describes in Chapter 5, may have varied origins, since members provide diverse rewards for one another and these change over time as the persons get better acquainted or as their roles change in the group.

It is reasonable to assume that the nature of the group life will vary with different sources of attraction. The members of a group who are primarily friends, for example, are likely to be more interested in one another as persons, perhaps more supportive of each other, more cordial in interpersonal relations, and so on. A group which is joined because it is a means for a person to obtain social status in a community, such as a "swanky" town club, might have more clique formations within it and more rivalry and prestige-seeking behavior than most groups.

Back (2) provides support for this notion in findings from an investigation in which he created experimental groups on the basis of three different bases of cohesiveness. The differences among the ways in which cohesiveness was produced led to different patterns of communication and influence among the members. When the cohesiveness was based on personal attraction to one another, the members made their discussion a long, pleasant conversation in which they expected to be able to persuade one another easily. When cohesiveness was based on effective performance of the task they were given to do, the members wanted to complete the activity quickly and efficiently, and discussed only those matters which they thought were relevant to achieving their purposes. When cohesiveness was based on the prestige obtainable from membership, the members acted cautiously, concentrated on their own actions, and in general were careful not to risk their status. Finally, with cohesiveness at a minimum (that is with none of the bases of attraction actively operating) the members of the pair acted independently and with little consideration for each other.

There is reason to believe that groups should be different to the degree that membership in them is the result of own forces, as compared to membership which occurs because the person is required to join. One can anticipate that a Sunday School class which is attended by children who are eager to be there will be quite different from one in which the scholars are delivered at the door by their parents despite their objections. Al-

though there is little research to support such speculations, Dimock (6, 181) has found that groups in the programs of formal youth agencies are less cohesive than are neighborhood gangs. This may be taken as relevant evidence if it can be assumed that membership in local gangs is more motivated by own forces, and that membership in agency groups results more from induced forces.

Some persons belong to very few groups. Cultural differences account for this, in part, since various cultures provide unequal opportunities for memberships in organizations or place separate emphases upon working or associating with others. The position a person has in society also determines whether he has memberships in voluntary organizations. It is known, for example, that persons with higher socioeconomic status, higher educational achievement, many friends, and a longer tenure in a community are more likely to participate in voluntary organizations in the United States (37). Doubtless, too, there are types of persons who prefer to avoid participation in a group whenever they can. Torrance and his associates suggest (43) that "aloners" are afraid of a group because they have doubts in themselves and fear ridicule, rejection, or coercion from others. Clearly, the cohesiveness of a group can be restricted if a number of its members dislike belonging to any group.

Increasing the Valence of a Group

The general principle may be derived that the valence of a group will be increased by heightening the awareness of a member (or a potential member) that he can fulfill his needs by belonging to the group. Since it is considerably more difficult, though not impossible, to change a person's needs, it is more common for organizations to attempt to strengthen various sources of attraction for the membership by dramatizing the value of the group's properties or the gains to be derived from belonging. An organization might increase interest in itself by emphasizing, for example, that many friendly people can be found there, that a strong union means higher wages, that other people envy those who belong, that membership is the shortest route to heaven, that exercise is good for you, that the girls in this "chorus line" are beautiful, and so forth. The frequent use of appeals of this sort indicates that a group can be made more attractive either by making it more need satisfying or by reminding the members that it does satisfy needs. Various rituals carried out by groups seem mainly to serve this latter purpose.

The desire to remain in a business organization was demonstrated by Ross and Zander (33) to be affected by the degree to which members felt there was a good chance their needs would be satisfied in it. They measured the strength of members' needs for autonomy, recognition, fair eval-

uations and the like, and obtained the workers' estimates of the probability that these needs would be satisfied by continued employment in the company. After a reasonable number of these employees had resigned, the scores of those who had left were compared with the scores of matched persons who had remained. The strength of the needs was found to be essentially the same for those who resigned and for the continuing workers, but those who stayed in the company perceived greater likelihood that their needs would be fulfilled than those who had departed.

There is very little systematic knowledge about the conditions which heighten cohesiveness, since only a few studies have been aimed directly at this problem. It is possible, nevertheless, to draw certain inferences about these conditions from investigations in which cohesiveness was an incidental part of the research problem. Let us consider first the intrinsic satisfactions of group membership.

The more prestige a person has within a group, or the more it appears that he might obtain, the more will he be attracted to the group. This is one of the conclusions drawn from the study by Kelley described in Chapter 41. He created a prestige hierarchy by giving some members the authority to tell others what to do and how to do it. He informed some of the higher status persons that they were secure in their jobs, whereas others among the *highs* were told that they might be changed to a lower status later in the experiment. Similarly, some of the *lows* were told that they would not be allowed to rise above their low positions, whereas other *lows* were informed that they might be promoted. Kelley found that the high-status job with the implied threat of demotion, and the low-status post with the impossibility of promotion, were clearly the most undesirable positions. He also noted that persons who were secure in their high status and those who felt that they might rise in status were most attracted to the rest of the members in the group.

Persons who are valued members are more likely to be attracted to a group than those who do not have much social worth. In Chapter 6, Jackson demonstrates that individuals who, unknown to them, were rated as the most valuable members by their colleagues were more attracted to membership than those who were rated as less valuable. Dittes (7) has reported that members who were made to feel well accepted in a group found it more attractive than those who were made to feel poorly accepted. This effect of high or low acceptance was much stronger among persons with lower self-esteem than among those with higher self-esteem, because members with lower self-esteem seemingly had a stronger need for acceptance by others. Snoek (40) has studied the effects of rejection by a group and observed that a person who is told he is to be rejected will maintain his desire to remain a member of it, and will try to win the approval of other members, if the rejection is based on some criterion

that affects his self-evaluation such as his lack of ability or the fact that the members do not like him. But he has little desire to remain a member and does not try to become more acceptable to others if the rejection is based on some characteristic he cannot change, such as being the wrong gender for the group.

A situation in which the group members are in a cooperative relationship is more attractive than one in which they are competing, according to Deutsch (Chap. 22). He created cooperative classroom groups by telling the members that all would be given the same grade depending upon the quality of their group's product. The competitive groups were informed that each member would be graded on his merits relative to the others in his own class. The cooperative groups displayed many symptoms of high cohesiveness. Compared to the competitive groups, the members liked one another more, made more attempts to influence one another, accepted influence attempts more readily, and were more friendly in their behavior. Results reported by Thomas in Chapter 23 indicate, moreover, that the greater the cooperation among members the more they were attracted to the group. It is relevant to note in this connection that the attraction of membership was stronger where fellow members were perceived to be more favorable toward participating in the group than where they were not (5). And, in Chapter 21, Raven and Rietsema reveal that a member is more strongly attracted to his group when he is clear as to the goal of the group and the path it is following toward the goal, as well as how his own task fits into the goal and path, than when he is not clear about these matters.

Heightened interaction among persons may increase the attractiveness that a group has for its members. This is stated as a hypothesis by Homans (21, 112) in the following terms: "If the frequency of interaction between two or more persons increases, the degree of their liking for one another will increase, and vice versa." Support for this hypothesis appears in the findings of an experimental study by Bovard (3). He studied several college classes. Some were led by group-centered teachers, and a comparable number were directed by leader-centered instructors. The members of the group-centered classes liked their fellow members better than did those under the other form of leadership. Bovard interprets this result as due to the greater interaction among the members of the group-centered classes. There is no convincing evidence, however, that interaction which is unpleasant will make persons better like one another. In fact, Festinger and Kelley (10) present data from a housing project which tend to support the opposite conclusion.

In a study of over 200 groups of workers in an industrial setting, Seashore (38) noted that smaller units were more likely to be cohesive than larger groups. Tsouderos (44) has offered a description of the changes in

a group as it grows in size which appears to be a reasonable explanation of the effects of size upon cohesiveness. He says: "With an increased membership there is a corresponding heterogeneity of the group in terms of sentiments, interests, dedication to the 'cause,' etc., and a corresponding decline in a feeling of intimacy and frequency of interaction."

Certain kinds of similarity among members may strengthen the cohesiveness of a group. One reason for this is that many persons join a group in order to understand themselves better and because group membership gives them an opportunity to compare themselves with others. Since such social comparisons are more trustworthy if they are made with persons close to the evaluators in ability, they are likely to seek out those who are most similar to themselves. In an experimental study, Zander and Havelin (49) observed that persons preferred to associate with those close to them in ability than with ones divergent from them in ability. The result of the tendency for like to join like in group association is an eventual increase in similarity among the members. Gross (16) proposes that similarity, designated by him as the basis for a *consensual* group, is a less stable source of group cohesiveness than a *symbiotic* relationship, in which members satisfy important needs of one another in their interaction. The usefulness of the distinction between consensual and symbiotic groups seems worthy of further empirical study.

Events outside the group can also influence its attractiveness to members. An illustration is provided in an unpublished report by Thibaut and Willerman. A crew of women working in the same room in a garment factory had little to do with one another. They seldom conversed on the job and even ate their lunches in silence. In the course of events they were all given a raise by management. Suddenly they became a different group. Friendly interaction began to occur on the job and their lunches became social occasions. The cause of this change in interpersonal relations is interpreted by these writers to be the commonality of fate they encountered in having their salaries increased. The group came to be seen as the means whereby they improved their financial condition, and the value of the group as a result was increased for them all.

The cohesiveness of a group is increased if its position is improved in respect to other groups. Members were more attracted to their groups, in a study by Deutsch (5), if they were told that there was a higher probability of successful achievement by their organizations than by other groups. In investigations by Stotland (41), and Seashore (38), cohesiveness was greater among groups whose performances were superior to that of other groups.

Thibaut (42) has shown that the valence of activities in a group affects the attractiveness of sharing membership in the group with others, that interteam hostilities which develop where two teams are forced to inter-

act on a basis of unequal status significantly affect the attractiveness of sharing membership with others, and that peripheral members are more susceptible than central members to influences tending to produce changes in interpersonal affiliations. In a laboratory experiment, he made the environment threatening and unpleasant for half of the boys playing games together in a large room, while he treated the others in a supportive and pleasant manner. For the former boys the group was a means only to discomfort and degradation. For the latter it was a means to satisfactory treatment and appreciation. Late in the experimental session, half of the groups which were accorded the disagreeable treatment were allowed to improve their lot at their own request, whereas the rest were not allowed to change. He reports that the groups with the sudden improvement in status did not increase in cohesiveness. The groups, however, which were favorably treated throughout the entire session did increase in cohesiveness. Central members in those underprivileged groups which were denied promotion also displayed an increase in attraction to the group.

It appears that cohesiveness can be increased in some groups by attacks from the environment and in other groups by agreeable experiences. An increase of cohesiveness because of an attack on the group has been observed, for instance, by Leighton (26). He noted that American-Japanese grouped themselves into strong organizations in wartime relocation centers when the administration began to make demands which appeared to threaten things they valued highly. In a set of experiments with boys in a summer camp, Sherif and Sherif (39) were able to generate considerable cohesiveness in a group by providing common goals and group symbols along with competition against a rival group. In a further study among groups in a camp setting by Pepitone and Kleiner (29), two teams of boys in each of a number of cabins were engaged in a tournament of competitive games. Some of the teams developed a high status, and others a low status, according to their degree of success in the games. Part way through the tournament the experimenters, in the guise of experts in sports, made public predictions concerning the probable winners in each cabin. Following these announcements measures of cohesiveness were made and compared with measures made before the tournament had begun. High status teams gained in cohesiveness, if they were told they would probably win, and lost in cohesiveness if told they would probably lose. Low status teams, however, did not differ in cohesiveness following the different predictions, because, the authors believe, low status teams developed closer cooperation and emotional support among their members when told they would probably lose, which was as conducive of cohesiveness as in the teams who were assured they would probably win. How can both favorable and unfavorable events have similar effects upon co-

hesiveness? When a group is attacked, an increase of cohesiveness apparently occurs if the group is perceived as a source of security. When the group is favorably evaluated, an increase in cohesiveness apparently results from the realization that membership in the group enhances personal prestige.

To summarize, the attractiveness of a group may be increased by making it better serve the needs of people. A group will be more attractive the more it provides status and recognition, the more cooperative the relations, the freer the interaction, and the greater security it provides for members.

Conditions Decreasing the Valence of a Group

The valence of a group will decrease for a person if the needs it has been satisfying are reduced, if it becomes less suitable as a means for satisfying existing needs, or if it acquires distasteful or unpleasant properties. A person will attempt to leave a group when its net attractiveness becomes less than zero, that is, when it becomes negative. He will actually leave only when the forces driving him away from the group are greater than the sum of the forces attracting him to the group plus the restraining forces against leaving.

The balance of forces toward and away from the group appears to be pretty even for many members of many voluntary groups. When the balance is nearly even or when it fluctuates widely over time, the turnover of membership will be great. If the valence favors the negative side for all members, the group will disintegrate, of course, unless withdrawal is prohibited in some way.

From this formulation it may be derived that a member will not take the active step of withdrawing from a group until the resultant force acting upon him is in the direction away from the group. This means that a group may retain its membership indefinitely even though its attractiveness is near or equal to zero. In fact, it is possible to find many groups which survive only because the members have no strong motivation to leave. Needless to say, such groups can exert little influence over their members and can enlist little activity in their behalf.

Persons on the borderline of membership may be pushed over into negative feelings if they are required by the group to accept some duty, to pay larger dues, or if in some other way they come to see that the group is making disagreeable demands. In some cases, where membership is based on a sense of duty, it may be possible to require help or donations without driving such a member away, since the peripheral member may relieve feelings of guilt for having neglected the group. Barring such a special case, however, we may expect that fringe members will be driven

out of groups by any unwanted demands upon them. When a group has a large number of such members, a sort of stalemate often results so that no one is asked to do anything for the group out of fear that the group will disintegrate.

This general formulation may be illustrated by reviewing several investigations which indicate some of the reasons that groups develop negative valence for their members.

The attractiveness of a group is lessened when the members disagree over the way to solve a group problem. This is a conclusion drawn by French (11) from a study of groups under frustration. He found that some persons walked away from the task when the group was disagreeing, often to sit in a corner and work on a private problem. French notes that this withdrawal is most likely to occur when the members are disagreeing over the method they should use in solving the problem. Groups of high cohesiveness are likely to be sensitive to small differences of opinion and will try to patch up these differences, according to findings reported by Gerard (14). It appears, then, that groups of high cohesiveness may readily disagree but that they will try to abolish disagreements quickly. When it appears, however, that differences of opinion cannot be reconciled, the cohesiveness of the group will be materially lowered.

The attractiveness of a group may be decreased if one has unpleasant experiences in it. One of the natural resultants of group life is that a member will be asked to assume responsibilities. Some of these, perhaps speechmaking, letter writing, bookkeeping, or leading a discussion, are duties for which he feels he is not adequately prepared. The attractiveness of the group might well be reduced, then, when it is the source of such embarrassment. Horwitz (Chap. 20) reports from a laboratory experiment some incidental observations which illustrate this phenomenon. In this experiment the members of each group were girls from the same sorority. A group task was assigned and the girls were highly motivated to do well. In the course of the task it became apparent to some of the girls that their own inability to contribute to the group task might prevent the group from doing well. This realization was quite disturbing and made the whole group activity less attractive. The effects of failure upon the attractiveness of a group are further illustrated in the study of industrial workers reported by Coch and French (Chap. 18). Here it was found that workers whose rate of production fell just below the group standard, so that feelings of failure were intense, had an extremely high rate of leaving the company. It follows that a group making excessive or unreasonable demands of its members is less attractive than one having more appropriate requirements. Stotland (41) observed in a laboratory experiment that members were less attracted to their group when they were expected to perform at a superior level than when they were ex-

pected to work at a more moderate level. In the experiment some subjects were made to succeed and others to fail on an individual assignment given them to do for the group. As would be expected, failers were less attracted to the group than succeeders, but it is noteworthy that those who failed on a task where the group's expectations were low, or the task was important to the group, had a greater decrease in attraction to the group than those who failed where the group's expectations were high or the task not important. It seems clear that attraction dropped most where feelings of failure were strongest. Moreover, the effect of failure in making the group less attractive was almost entirely confined to persons who were known to have low self-esteem and seldom occurred among persons with high self-esteem.

It has been observed that people may leave a group because they feel that other members are too dominating or that they have some other unpleasant characteristics. Fouriezos, Hutt, and Guetzkow (13) present supporting evidence when they show that staff conferences in which a high frequency of self-oriented behavior occurs are rated by the members as relatively unsatisfying. Further evidence is provided by Festinger and Kelley (10) from a study of a housing project in which the residents perceived one another as being "low class." In this small community it was extremely difficult to develop a tenants' organization, even with the aid of professional community organizers. Participation in the programs of the residents' council was viewed as possibly lowering one's social status. This was in sharp contrast to another housing project in which the members liked one another and readily formed a project council for fire protection and to meet other mutual needs.

Membership in a group may limit the satisfactions a person can receive from activities outside it. A telephone operator on a night shift, for example, cannot participate in a normal family life, or be available for dates with friends. The extent to which a job interferes with family or community activities may be as important in reducing attraction to the organization as lack of satisfaction on the job (33).

A rather unexpected cause for decrease in group cohesiveness has been reported by Riecken (31). He describes a work camp whose prevailing atmosphere placed a high value on friendly and gentle interactions. In the course of performing daily duties, however, minor antagonisms were bound to arise. Since these campers were members of an association which disapproves of both physical and verbal aggression, they found it difficult to raise problems in which some person or a subgroup was at fault. These problems, when discussed in staff meetings, were usually handled in an abstract and intellectual fashion and few of the resultant decisions were carried through. Typically, a member apologized for bringing up the problem and stated that he did not mean to blame anyone for the state

of affairs. The resulting condition amounted, consequently, to a failure of communication on important matters, and antagonisms continued much to the unhappiness of all. Quite different kinds of barriers to communication can occur, but with similar results. For example, in an international conference the cohesiveness of the group may be strongly affected by the presence of language differences, or groups working at noisy machines may be less cohesive than those working at quiet tasks where the members can easily converse while working.

The negative evaluation placed upon membership in a group by people in the surrounding community can also make the group unattractive to its members. Groups which, as groups, have low status find it necessary to make special efforts to keep their members attracted. Warner, *et al.* (46), Davis, *et al.* (4), and many others have described the pressures on minority group members to "pass" into the majority when their physical characteristics, or other cues used to designate them, make this escape possible. The strong urge for upward-mobility in America seems also to produce many shifts in group membership as these become possible for particular individuals. This phenomenon is illustrated by the boy from a lower socio-economic level who went to college and then assiduously avoided relationships with his precollege friends for fear that they would endanger his new status.

The competition among groups for members provides a final reason that members may wish to leave a group. A member of a church may resign and join another in the same community. Or, a parent may switch from one child-study club to another. It is important to note, however, that all new memberships do not cause an individual to give up old ones. We need only to mention those inveterate joiners who add memberships to their list in much the same way that a Boy Scout collects merit badges. Under what conditions will the entrance into a new group cause one to depart from an earlier one? Two conditions may be noted: (*a*) The second group appears better able to satisfy the needs of the individual, and he has a limited supply of time or energy available for participation; and (*b*) the standards of the second group are in conflict with those of the first. In this latter case, a group may even specify in its membership requirements that a person shall not belong to certain other groups.

The Formation of Splinter Groups

Historical accounts of man's organized efforts frequently describe the formation of small bodies which leave the original association to become the supporters of their own program. Examples may be easily found in the history of religious movements, political parties, and "schools of thought." It is not without significance that these splinterings have tended to appear more often in groups which have had strong value or ideologi-

cal orientations than in those without such leanings. The discussions by Festinger (Chap. 16), Festinger, Schachter, and Back (Chap. 14), and Schachter (Chap. 15), describe situations which lead groups to reject members holding deviant ideas with the unintended result that they create conditions conducive to the formation of competing groups. At this point, however, we shall concentrate our attention on subgroups which take themselves out of the parent body, rather than being dismissed by it.

In his observations of a Japanese relocation center in this country, Leighton (26) noted the formation of subgroups within the camp when a stressful situation arose. His explanation for the development of these small bodies (within the larger organization) is that the earlier modes of behavior, originally established in their home environment, could not be used in this unusual situation. The crisis thus demanded forms of behavior for which there were no already established norms. As a result, a new social organization was created among the inmates, and subgroups coalesced around different and conflicting answers to the problems facing them. The seemingly placid camp suddenly became a collection of opposing factions.

Subgroups also occurred in the experiments on different styles of leadership described by White and Lippitt (Chap. 28). It was found that the boys' clubs were more likely to disrupt into in-group and out-group under the authoritarian style of leadership, than under the democratic style, presumably because the hostile tensions created by the restrictive leadership could not be relieved through aggression against an adult. The members were consequently forced to release their tensions by attacking a subgroup.

In all of these examples the boundaries of the group are redefined by the members. Certain persons within the total membership are seen as more likely to gratify one another's needs than is the total organization and a new group is formed for that purpose. Since an embryonic splinter group is only an idea before it is a reality, it can have few group properties other than its goals with which to attract recruits. These factions are therefore likely to be primarily concerned with defining "social reality," i.e., with ideological or value difference. As was noted earlier, they are most likely to occur in bodies which place great importance on ideas. In a cooperative group, where all members share a common goal, there is less likely to be disintegration of the organization than in a competitive group. When incipient disintegration arises among members, because of stressful experiences for the group, members are likely to become concerned with restoring harmony if they are interdependent. The seeking of harmonious relations under stressful conditions has been observed in a number of investigations (18, 24, 29, 35).

It seems reasonable to assume that the tendency to break apart would be more likely, the larger the group. Some data supporting this assump-

tion are reported by Hare (19). He finds that discussion groups of twelve members are more likely to fall into small, often conflicting, subgroups than are those with six members. The conditions of the experiment, however, did not allow these to develop into overt, opposing factions.

Persons who seek to satisfy different needs may form subgroups suitable to their interests. Elizabeth French (12), for example, put friends together who had either a high need for affiliation or a high need for achievement. When asked to choose the persons with whom they would prefer to associate in subsequent meetings, those with a high need for affiliation chose others whom they liked as persons, while those with a high need for achievement chose those who were the best performers in the group. Presumably, if these had been enduring groups, they might eventually have split into two cliques on the basis of their separate needs.

It is not necessarily true that splinter groups tend to disrupt the larger organization. It may be that they actually increase the attractiveness of the larger body. Consider, for example, a department within a large company where membership on the department's bowling team, or a luncheon group, may become very attractive to an individual. The satisfaction thus derived may be generalized to warm approval of the whole company. Or, pride in one's military squad may lead to pride in the larger military organization. When does subgrouping tend to weaken the whole and when does it tend to strengthen it?

We suggest that splinter-group formation will disrupt the larger organization when the goals of the smaller group are incompatible with those of the larger. In contrast, they will strengthen the cohesiveness of the total when the goals of the smaller group are the same as, or supportive of, the larger body's goals. An illustration is the formation of a club within a church. Let us assume that it becomes critical of the values upheld by the congregation. It would be assumed that the ardent members of this club would find the church less attractive and the club much more appealing. If sufficiently dissatisfied they might even leave the church and hold their meetings elsewhere. If, however, the objectives of the club are the same as those of the church, the members would presumably develop increased attractiveness both to the church and to the club.

Although such conjectures as these appear reasonable, it should be emphasized that there has been only the most meager descriptive beginning in the study of splinter-group formation. Obviously, there is much yet to be learned regarding these matters.

Consequences of Cohesiveness

If a member receives a desired resource in a group, it is likely that he will want to keep things as they are by helping to maintain the group or by working to ensure its effectiveness as an organization. In a variety of

studies it has been noted that members who are highly attracted to a group more often exhibit behavior beneficial to it than those who are less attracted.

Responsible activity. Those who are highly attracted to a group more often taken on responsibilities for the organization (25), participate more readily in meetings (2), persist longer in working toward difficult goals (22), attend meetings more faithfully, and remain members longer (34, 27).

Interpersonal influence. Attracted members more readily try to influence others (Chap. 15), are more willing to listen to others (2), are more accepting of others' opinions (Chap. 16, 30), and more often change their minds to take the views of fellow members (2).

Similarity of values. Members who are strongly attracted to a group place greater value on the group's goals (49), adhere more closely to the group's standards (38), and are more eager to protect the group's standards by exerting pressures upon or rejecting persons who transgress them (Chap. 15).

Development of security. Attracted members are less likely to be "jumpy" or nervous in group activities and more often find security or release from tension in their membership activities (38).

We recall that individuals can be attracted to a group even when they are not members of it. In such an instance would attraction to the group have consequences similar to, or different from, those just cited? There is little evidence to draw upon in answering this question, but on the basis of several studies (23, 30) it appears that those who are not members but who are strongly attracted to membership act as members do, and in some cases may outdo the members, apparently in order to prove their suitability for acceptance by the group. Jackson (23) has described different types of behavior we might expect from persons in separate combinations of high or low attraction to a group and high or low acceptance of the person by the group.

Some Questions about the Concept of Cohesiveness

The cohesiveness of a group as conceived here is determined by the attractiveness of the group to its members. Any given group, of course, may have both attractive and repelling features, and its cohesiveness must refer to the resultant of these opposing forces. While this formulation helps in the treatment of many important group phenomena, it leaves unsettled several more specific problems. Some of these have been raised by Gross and Martin (17) in a critique of the concept of cohesiveness, and treated in detail by Van Bergen and Koekebakker (45) in a full discussion of the ways cohesiveness has been conceived.

What difference does the source of attraction make? The cohesiveness

of any given group is the resultant of many distinguishable forces toward and away from the group. We have seen that the attractiveness of a group may derive from several sources such as the attractiveness of the members as persons, of the activities of the group, or of ends mediated by the group. Is there some common denominator among these so that one can hope to obtain consistent relations between a given amount of cohesiveness (regardless of its specific sources) and other properties of the group, or must the various sources of attraction always be isolated and measured separately? The pertinence of this last question is heightened by Eisman's report (9) that she found very little statistical relationship among the group averages on five different measures of cohesiveness; although it is not entirely clear on theoretical grounds why these measures should have been correlated.

In order to answer this question with finality, further research is needed. The best evidence bearing directly on this problem is provided by Back (2), whose findings tend to support the conclusion that different sources of attraction do have certain similar consequences. In his experiment, it will be recalled, groups were established on three bases: personal attraction, task attraction, and possible prestige gains from membership. The strength of attraction for each basis was varied. The conclusions were that the style of communication and influence was different for each source of attraction but that a similar increase of attraction on each basis led to a similar increase in the power of the group to influence its members. With respect to *power to influence,* then, it appears probable that different sources of attraction have the same effect.

Do the attractions from different sources add up to increase total attractiveness? Back has shown that, for three separate bases of attraction, increasing the attractiveness of a group does increase the power that the group has over the member, but he has not demonstrated that the presence of more than one source of attraction in the same person gives the group more power than when only one source is present. Essentially the same problem may be stated in a different way: If the attraction to the group's activities is equal in two groups, will one of them have greater cohesiveness if in addition its members are more attractive? We should expect that the addition of attractions from different sources would actually increase the total attractiveness of the group for an individual, but systematic research has yet to establish the fact.

How should the several individual scores of attraction to the group be combined to form a single value of cohesiveness? Even after we achieve a satisfactory method for determining an individual's resultant attraction to the group, there remains the problem of combining individual scores into an index of group cohesiveness. The simplest formulation of group cohesiveness would be that it equals the sum of the resultant forces on members to remain in the group. Each member would be given equal

weight. A formulation essentially of this type has been used in most of the research conducted up to the present, and on the whole it has proved satisfactory. There can hardly be any doubt, however, that the degree to which certain members are attracted to the group makes a critical difference, while the degree of attraction of other members is relatively inconsequential to the group. Only further research can determine the most satisfactory method for relating individual attraction scores to an index of group cohesiveness.

Overview of Research Reported in this Section

Relatively few systematic studies have been conducted with the purpose of determining the factors increasing or decreasing group cohesiveness. It has been much more customary to view cohesiveness as the cause of other properties. The first three chapters in this section illustrate studies of the origins of cohesiveness.

The first selection is by Aronson and Mills (Chap. 4) in which they report the results of a laboratory experiment on the effects of severity of "initiation" on the subsequent attraction of a group. In order to qualify for membership in a group discussing the psychology of sex, women candidates were required either to read aloud embarrassing sexual material, or unembarrassing material, or not to read aloud at all (control subjects). Every candidate was accepted as a member and allowed to attend a discussion that was as banal, uninteresting, and uninviting as could be imagined. Those who read aloud the highly embarrassing material perceived the group as significantly more attractive than those who read unembarrassing content or who had no initiation at all. A fuller explanation of the theory that inspired this study is offered in Chapter 12 by Festinger and Aronson.

Newcomb shows in Chapter 5 that interpersonal attraction may be composed of any or all of the following subclasses of attraction: admiration, reciprocation (judged favorability of another toward the self), role support, value support, or respect. All of these are conceived as various ways in which the chooser may see another person as a source of rewards. He reports results from intensive, semester-long observations of two groups of college students who were brought together as strangers and who earned their room rent by serving as subjects while living in the same house. His findings reveal: (*a*) that individuals provide diverse sources of reward for one another; (*b*) that the sources of attraction change as members become better acquainted; (*c*) that certain sources of attraction are more stable than others; (*d*) that different sources of attraction have different consequences for interpersonal behavior; and (*e*) that the personalities of members determine in part what they find attractive in one another.

In Chapter 6, Jackson demonstrates that a person's attraction to his work group is directly related to the degree that others consider him valuable to that group, but his attraction to the group has almost no relationship to the degree that the person believes he is valued by others. Jackson obtained his data from every member on the staff of a large social agency, top to bottom. He was able, then, to compare the sources of attraction to the group for both professional and nonprofessional persons. He shows that the benefits derived from working in the organization are important to the professional members of the staff, but of little importance to the nonprofessional members, in determining their attraction to the organization. Moreover, the greater the amount of interaction professionals have with other members of the staff, the more the benefits which are derived from membership affect the amount of attractiveness the organization holds for them.

In the next two chapters studies are reported showing effects of high or low cohesiveness upon behavior in a group. Pepitone and Reichling describe, in Chapter 7, an experiment concerning the readiness of a group to show hostility toward a superior who has "insulted" them. The insults occurred while the group was waiting in the laboratory for the experimenter's beginning instructions. During this lull an assistant came into the room and engaged the subjects in a discussion, displaying extreme annoyance at how inadequate the subjects were. After the "insulter" departed the experimenter excused himself, leaving the subjects alone in the room. He placed himself behind a one-way glass to observe the subsequent behavior of the members. Those with high cohesiveness freely engaged in hostile remarks against the insulter, whereas those in groups with low cohesiveness sat quietly or spoke of matters unrelated to their embarrassing experiences.

Finally, in Chapter 8, Schachter, Ellertson, McBride, and Gregory examine the way in which group cohesiveness affects group productivity. They maintain that cohesiveness as such does not necessarily increase or decrease the productivity of a group. Rather, cohesiveness (or attraction to group membership) serves to heighten the susceptibility of group members to influence from other members. Thus, if the predominant influences are to restrict production, cohesiveness will tend to heighten these influences and will lower productivity. If, on the other hand, the group influences are in the opposite direction, cohesiveness will tend to heighten productivity.

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4
The Effect of Severity of Initiation on Liking for a Group

Elliot Aronson and Judson Mills

It is a frequent observation that persons who go through a great deal of trouble or pain to attain something tend to value it more highly than persons who attain the same thing with a minimum of effort. For example, one would expect persons who travel a great distance to see a motion picture to be more impressed with it than those who see the same picture at a neighborhood theater. By the same token, individuals who go through a severe initiation to gain admission to a club or organization should tend to think more highly of that organization than those who do not go through the severe initiation to gain admission.

Two questions are relevant here: (*a*) Is this "common observation" valid, that is, does it hold true when tested under controlled conditions? (*b*) If the observation is valid, how can it be accounted for? The relationship might be simply a result of differences in initial motivation. To take the case of initiations, persons who initially have a strong desire to join a particular club should be more willing to undergo unpleasantness to gain admission to it than persons who are low in initial interest. Therefore, a club that requires a severe initiation for admission should be joined only by those people with a strong desire to become members. On the other hand, a club that does not require a severe initiation should be joined by some individuals who like it very much, and by others who are relatively uninterested. Because of this self-selection, one would expect persons who are members of clubs with severe initiations to think more highly of their club, on the average, than members of clubs without severe initiations.

But is there something in the initiation itself that might account for this relationship? Is severity of initiation positively related to group preference when motivation for admission is held constant? Such a relation-

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ship is strongly implied by Festinger's (1) theory of cognitive dissonance. The theory of cognitive dissonance predicts this relationship in the following manner. No matter how attractive a group is to a person it is rarely completely positive, i.e., usually there are some aspects of the group that the individual does not like. If he has undergone an unpleasant initiation to gain admission to the group, his cognition that he has gone through an unpleasant experience for the sake of membership is dissonant with his cognition that there are things about the group that he does not like. He can reduce this dissonance in two ways. He can convince himself that the initiation was not very unpleasant, or he can exaggerate the positive characteristics of the group and minimize its negative aspects. With increasing severity of initiation it becomes more and more difficult to believe that the initiation was not very bad. Thus, a person who has gone through a painful initiation to become a member of a group should tend to reduce his dissonance by over estimating the attractiveness of the group. The specific hypothesis tested in the present study is that individuals who undergo an unpleasant initiation to become members of a group increase their liking for the group; that is, they find the group more attractive than do persons who become members without going through a severe initiation.

Method

In designing the experiment it was necessary to have people join groups that were similar in every respect except for the severity of the initiation required for admission—and then to measure each individual's evaluation of the group. It was also necessary to randomize the initial motivation of subjects to gain admission to the various groups in order to eliminate systematic effects of differences in motivation. These requirements were met in the following manner: Volunteers were obtained to participate in group discussions. They were assigned randomly to one of three experimental conditions: A *Severe* initiation condition, a *Mild* initiation condition condition, and a *Control* condition. In the Severe condition, subjects were required to read some embarrassing material before joining the group; in the Mild condition the material they read in order to join the group was not very embarrassing; in the Control condition, subjects were not required to read any material before becoming group members. Each participant listened to the same tape recording which was ostensibly an ongoing discussion by the members of the group that he had just joined. Subjects then evaluated the discussion.

The subjects were 63 college women. Thirty-three of them volunteered to participate in a series of group discussions on the psychology of sex. The remaining 30, tested at a somewhat later date, were "captive volun-

teers" from a psychology course who elected to participate in the group discussions on the psychology of sex in preference to several other experiments. Since the results obtained from these two samples were very similar, they were combined in the analysis presented here.

Each participant was individually scheduled to "meet with a group." When she arrived at the experimental room, she was told by the experimenter that he was conducting several group discussions on the psychology of sex. The experimenter informed her that she was joining a group that had been meeting for several weeks and that she was taking the place of a girl who had to leave the group because of scheduling difficulties. He stated that the discussion had just begun and that she would join the other members of the group after he had explained the nature of the experiment to her. The purpose of the foregoing instructions was to confront the subject with an ongoing group and thus make plausible the recorded discussion to which she was to be exposed.

The experimenter then "explained" the purpose of the experiment. He said that he was interested in investigating the "dynamics of the group discussion process." Sex was chosen as the topic for the groups to discuss in order to provide interesting subject matter so that volunteers for the discussion groups could be obtained without much difficulty. He continued as follows:

> But the fact that the discussions are concerned with sex has one major drawback. Although most people are interested in sex, they tend to be a little shy when it comes to discussing it. This is very bad from the point of view of the experiment; if one or two people in a group do not participate as much as they usually do in group discussions because they are embarrassed about sex, the picture we get of the group discussion process is distorted. Therefore, it is extremely important to arrange things so that the members of the discussion group can talk as freely and frankly as possible. We found that the major inhibiting factor in the discussions was the presence of the other people in the room. Somehow, it's easier to talk about embarrassing things if other people aren't staring at you. To get around this, we hit upon an idea which has proved very successful. Each member of the group is placed in a separate room, and the participants communicate through an intercom system using headphones and a microphone. In this way, we've helped people relax, and have succeeded in bringing about an increase in individual participation.

The foregoing explanation set the stage for the tape recording, which could now be presented to the participant as a live discussion conducted by three people in separate rooms.

The experimenter then mentioned that, in spite of this precaution, occasionally some persons were still too embarrassed to engage in the discussions and had to be asked to withdraw from the discussion group. The subject was asked if she thought she could discuss sex freely. She invaria-

bly answered affirmatively. In the Control condition the subject was told, at this point, that she would be a member of the group.

In the other two conditions, he went on to say that it was difficult for him to ask people to leave the group once they had become members. Therefore, he had recently decided to screen new people before admitting them to the discussion groups. The screening device was described as an "embarrassment test" which consists of reading aloud some sexually oriented material in his presence. The subject was told that the experimenter would make a clinical judgment of her degree of embarrassment, based upon hesitation, blushing, etc., and would determine whether or not she would be capable of participating in the discussion group. He stressed that she was not obligated to take this test, but that she could not become a member unless she did. Only one woman declined to take the test. She was excluded from the experiment. It was also emphasized, at this point, that the "embarrassment test" was a recent innovation and that the other members had joined the group before it was required for admission. These instructions were included in order to counteract any tendency to identify more strongly with the group as a result of feelings of having shared a common unpleasant experience. Such a process could conceivably bring about a greater preference for the discussion group on the part of those persons in the Severe condition, introducing ambiguity in the interpretation of the results.

In the Severe condition, the "embarrassment test" consisted of having the subjects read aloud, from 3 x 5 cards, 12 obscene words. Subjects also read aloud two vivid descriptions of sexual activity from contemporary novels. In the Mild condition, they read about five words that were related to sex but not obscene. In both the Severe and the Mild conditions, after each person finished reading the material, she was told that she had performed satisfactorily and was, therefore, a member of the group and could join the meeting that was now in progress.

It was of the utmost importance to prevent the new member from attempting to participate in the discussion, for if she did, she would soon find that no one was responding to her statements and she would probably infer that the discussion was recorded. To insure their silence, all participants were told that, in preparation for each meeting, the group reads an assignment which serves as the focal point of the discussion; for this meeting, the group read parts of the book, *Sexual Behavior in Animals*. After the subject had indicated that she had never read this book, the experimenter told her that she would be at a disadvantage and would, consequently, not be able to participate as fully in this discussion as she would had she done the reading. He continued, "Because the presence of a participant who isn't contributing optimally would result in an in-

accurate picture of the dynamics of the group discussion process, it would be best if you wouldn't participate at all today, so that we may get an undistorted picture of the dynamics of the other three members of this group. Meanwhile, you can simply listen to the discussion, and get an idea of how the group operates. For the next meeting, you can do the reading and join in the discussion." The subjects were invariably more than willing to comply with this suggestion. The above instructions not only prevented them from attempting to participate in the discussion but also served to orient her toward the actual content of discussion.

Under the guise of connecting the subject's headphones and microphone, the experimenter went into the next room and turned on the tape recorder. He then returned to the experimental room, put on the headphones, picked up the microphone, and pretended to break into the discussion which supposedly was in progress. After holding a brief conversation with the "members of the group," he introduced the new member to them. Then he handed the headphones to her. The tape was timed so that at the precise moment that she donned her headphones, the "group members" introduced themselves and then continued their discussion.

The use of a tape recording presented all participants with an identical group experience. The recording was a discussion by three female undergraduates. It was deliberately designed to be as dull and banal as possible in order to maximize the dissonance of the subjects in the Severe condition. The participants spoke dryly and haltingly on secondary sex behavior in the lower animals, "inadvertently" contradicted themselves and one another, mumbled several *non sequiturs*, started sentences that they never finished, hemmed, hawed, and in general conducted one of the most worthless and uninteresting discussions imaginable.

At the conclusion of the recording, the experimenter returned and explained that after each meeting every member of the group fills out a questionnaire expressing her reactions to the discussion. The questionnaire asked the new member to rate the discussion and the group members on 14 different evaluative scales, e.g., dull-interesting, intelligent-unintelligent, by circling a number from 0 to 15. After completing the questionnaire, she made three additional ratings, orally, in response to questions from the experimenter. Nine of the scales concerned the subject's reactions to the discussion, while the other eight concerned her reactions to the participants.

At the close of the experiment, he engaged each subject in conversation to determine whether or not she was suspicious of the procedure. Only one entertained definite suspicions; her results were discarded.

Finally, the true nature of the experiment was explained in detail. None of the participants expressed any resentment or annoyance at hav-

discussion show greater differences between the conditions than the scales dealing with the evaluations of the participants in the discussion. There are at least two possible explanations for this result: (*a*) It may be easier for people to express negative criticism about an impersonal discussion than about the people involved. Thus, persons in the Control and Mild conditions may have inflated their ratings of the participants to avoid making negative statements about fellow college students. (*b*) It is possible that those in the Severe condition had less need to distort their perception of the participants than of the discussion itself. The dissonance of the subjects in the Severe condition resulted from the actual discussion: they experienced dissonance between going through an unpleasant experience and taking part in worthless uninteresting discussions. The most direct way for them to reduce this dissonance would be to change their perceptions of the discussion in a positive direction. The participants in the discussion were peripheral to the cause of dissonance. If persons in the Severe condition had less need to distort their perceptions of the participants than their perception of the discussion, their evaluations of the participants could be expected to be closer to the evaluations of the participants made by subjects in the Control and Mild conditions.

Summary and Conclusions

An experiment was conducted to test the hypothesis that persons who undergo an unpleasant initiation to become members of a group increase their liking for the group; that is, they find the group more attractive than do persons who become members without going through a severe initiation. This hypothesis was derived from Festinger's theory of cognitive dissonance.

College women who volunteered to participate in discussion groups were randomly assigned to one of three experimental conditions: A *Severe* initiation condition, a *Mild* initiation condition, and a *Control* condition. In the Severe condition, subjects were required to read some embarrassing material before joining the group; in the Mild condition the material they read in order to join the group was not very embarrassing; in the Control condition, subjects were not required to read any material before becoming group members. Each subject listened to a recording that appeared to be an ongoing discussion being conducted by the group which she had just joined. Afterwards, subjects filled out a questionnaire evaluating the discussion and the participants. The results clearly verified the hypothesis. The subjects who underwent a severe initiation perceived the group as being significantly more attractive than did those who underwent a mild initiation or no initiation. There was no appreciable differ-

ence between ratings by subjects who underwent a Mild initiation and those by subjects who underwent no initiation.

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5
Varieties of Interpersonal Attraction

Theodore M. Newcomb

Most of us, I suppose, are intuitively aware of differences in the ways we feel attracted to different persons. Intuitive distinctions do not, of course, necessarily correspond to "scientific" distinctions—i.e., those which can be distinguished conceptually rather than just phenotypically, and which can be demonstrated to differ either as to their sources or their consequences, or both. Nevertheless, it seems worth while to inquire whether distinctions of the latter kind can be made, and whether it is profitable to make them.

The existing literature on interpersonal attraction appears to contain no such distinctions, in any formal sense. Hence the reader of either theoretical or empirical treatises is likely to conclude that, for social-psychological purposes, the phenomena of attraction are undifferentiated (except in degree). The word "liking," for example, appears frequently in the technical literature of sociometry without any other analogous words from which it is distinguished. I shall argue, however, that the concept of attraction is analogous to that of motivation: while all concrete instances of either have something in common (else we should not apply the same term to all of them), there are also subclasses of either that it may be important to distinguish. Thus I shall argue that "liking" (as the term is commonly understood) is significantly different, both in its sources and in its consequences, from other subclasses of interpersonal attraction.

This paper thus points to a set of distinctions among several classes of attraction, together with a rationale for that particular set of classes and some hints concerning their differential consequences. I shall begin with a brief sketch on the psychological nature of interpersonal attraction, since the rationale for the distinctions derives from the theoretical assumptions that I have made.

This chapter is an expanded and somewhat modified version of an essay contributed to J. Peatman & E. Hartley (Eds.), *Festschrift for Gardner Murphy*. New York: Harper, 1960.

One very general way of conceptualizing the phenomenon of attraction on the part of one person toward another is in terms of *valence.* According to Lewin's terminology, any object has positive valence for any other object to the degree that there are forces acting upon the latter that impel it (either physically or psychologically) toward the former. In behavioral terms, positive valence corresponds to an approach tendency. This way of looking at things has the advantage of identifying the particular phenomenon of interpersonal attraction as a special case of a general class of phenomena.

I propose, however, to delimit the concept of attraction somewhat more narrowly than the phrase "interpersonal valence" would suggest. I do so primarily because either of two sets of conditions (or some combination of both) may result in approach behavior, and because it seems to me preferable to conceptualize attraction in terms of one rather than both of them. To illustrate, the approach behavior of a boy responding to his father's suggestion, "Come here and I'll give you some candy," is psychologically quite different from approach behavior on the part of the same boy responding to his father's command, "Bring that to me immediately or I'll punish you." One way of describing the difference is in terms of expectations of being rewarded *vs.* expectations of avoiding punishment. While it is true [Cf. Miller (6) on approaching avoidance conflict, or Freud on the notion of ambivalence] that many if not most everyday situations include both kinds of components, I believe that there are theoretical gains, for pursuing the present problem, in making the theoretical distinction.

Hence I prefer to conceptualize positive attraction not in terms of total valence, or of observable approach behavior, but rather in terms of *reward-associated attitudes.* Negative attraction, by the same token, is conceptualized in terms of punishment-associated attitudes. From this point of view, any observed instance of approach behavior (on the part of one person toward another) may be examined in terms of the basically person-to-person dispositions that serve to determine the behavior, apart from other ("situational") determinants that may affect the observed behavior of approaching or avoiding.

But an attitude, as conventionally defined, as for example, by Krech and Crutchfield (4, 152), refers to the organization of *all* of the relevant psychological processes on the part of an individual with respect to the object of his attitude (a person, for present purposes). Cognitive processes, in particular, are involved. Thus if one is positively attracted toward a person (i.e., one has a favorable attitude toward him), one is likely to endow him, cognitively, with favorable attributes—that is, with properties that one regards as rewarding. Interpersonal attraction is paralleled by the attribution of reward value, and may be defined as an attitude

characterized by the attribution of reward value (positive or negative) to a person.

There are many ways in which one person may find another rewarding, and this fact suggests the possibility that attraction should be conceptualized not as a unitary, invariant phenomenon that varies only on the dimensions of degree and sign, but also as something that varies with the nature of perceived rewards. It is easy to spin out fine distinctions, however, and any attempt to categorize "varieties of attraction" should exercise at least two kinds of caution.

Such a set of categories should, in the first place, be constructed not in haphazard, raw-empirical manner but according to some system of theoretical requiredness. There may, of course, be many theoretical frameworks of equal serviceability for this purpose; if so, the question of the relative advantages among them, though an important one, is not the present issue. The set of categories—whether or not the "best" of all possible ones—should *as a total set* be required by some internally consistent theoretical framework.

Second, the categories should represent differences that "make a difference." Eventually, of course, only empirical tests can determine whether this criterion has been met.

Attraction as a Component in Systems of Orientation

The "internally consistent theoretical framework" in terms of which I shall approach the problem of distinguishable forms of reward value has been more fully described elsewhere (7, 8). For present purposes, the essential features of this framework are (*a*) that attraction (as a special kind of attitude) is psychologically imbedded within an individual's *system of attitudes,* of which his attraction for another person is but one component; and (*b*) such systems (like all others) have their own dynamics—i.e., orderly principles of stability and change. Thus the framework provides a basis not only for making distinctions among varieties of attraction (primarily in terms of interrelationships among the several attitude-components of the individual system), but also for illuminating the dynamics of attraction.

According to this formulation, any two (or more) individuals, if the relationship to each other is sufficiently non-trival to engage our interest, are confronted with problems of adapting (*a*) to each other, as objects of attitudes; (*b*) to their common world of objects other than each other; (*c*) to each others' modes of adaptation to both of the preceding. All of these modes of adaptation may be conceptualized as attitudes (including attitudes attributed to others), but for purposes of terminological clarity it seems preferable to use orientation as the inclusive term, and to refer to the three classes of orientation (referred to above as modes of required

adaptation) as *attraction, attitude,* and *perceived attitude* (i.e., attributed to another person) respectively. A schematic representation of these kinds of orientation appears in Figure 1.

With respect to a given other person, B, and a given common object, X, it is postulated not only that the four kinds of orientations and perceived other's orientations on the part of an individual, A, are interdependent, but also that their interdependence is system-like. That is, (*a*) a change in any of the kinds of orientation may affect changes in any of the others,

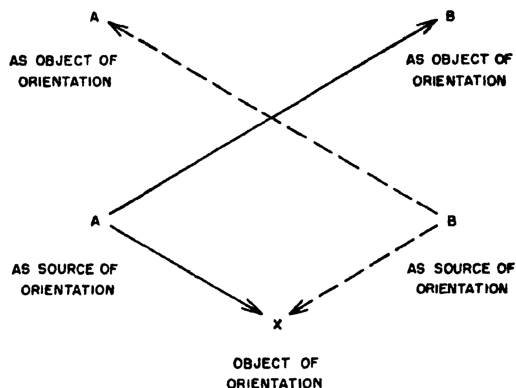


FIG. 1. A's phenomenal system, in co-orienting toward B, another person, and toward X, any object perceived by A as being oriented to by both A and B. (Solid lines represent A's orientations, and broken lines those which A attributes to B.)

in predictable ways; and (*b*) such changes occur in such ways as to maintain (or to tend toward the maintenance of) stable relationships among certain of the orientations. The postulated system-like nature of an individual's set of A-B-X orientations is analogous to certain homeostatic systems of living organisms—e.g., those which result in constant body temperature in spite of environmental changes—as described, for example, by Cannon (1). The stable properties of the A-B-X system, it should be noted, are not to be found in single orientations, but in relationships among them. Changes in orientations are governed by the principle of maintaining stable relationships.

The mechanisms of maintaining such stable relationships may be described more specifically. They have basically to do—somewhat in the manner of Lewin's "quasi-stationary equilibrium" (5)—with two kinds of forces which, in the case of a given individual in a given B-X setting, may be opposed. They may be described as *reality-oriented* and *autistic*. The first of these refers to the obvious rewards of accurate assessment of the properties of objects of attitudes: one is most likely to be rewarded, in one's traffic with a given object, if one's expectations regarding it are ac-

characterized by the attribution of reward value (positive or negative) to a person.

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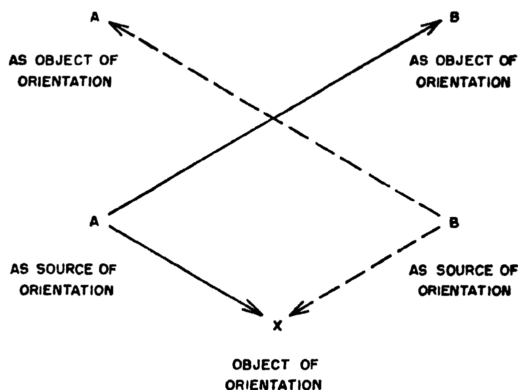


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curate (in the sense of being substantiable) rather than erroneous. Reality forces correspond to the second of the modes of required adaptation mentioned above, viz., adaptation to the world of objects.

Autistic forces, on the other hand, correspond to the third of these modes of adaptation—i.e., to other persons' modes of adaptation. The necessity for this stems basically from the fact of our dependence upon others *as communicators* about the world of common objects (including ourselves). It is often not possible to verify, by our own direct, sensory experience, our assessment of things; and even when we can we are apt to feel more comfortable if we find confirmation of that assessment from others. So dependent has each of us become, during the socialization process, upon others' assessment of the things that interest us, that we have learned to be rewarded by it, and to be threatened by its absence. Provided that A considers B a trustworthy source of information or of confirmation, A's discovery that B's assessment of some important common object is different from his own is a kind of danger signal. Such perceived discrepancy is stressful, drivelike; like other drives, it tends to initiate activity. And (as in the case of other drive-aroused activity, following learning) the activity tends to be directed toward the removal of the drive state. In this case, of course, the drive state is perceived discrepancy, and it could be removed by any sequence of activities resulting in confirmation of A's assessment of X—perhaps the same assessment as existed before the discovery of discrepancy with a trusted B, or perhaps one that has been modified by activities aroused by its discovery.

Autistic forces, in short, have to do with an individual's psychological need to find confirmation for his own assessments of common objects. Such a force may be conceptualized quite independently of reality forces. Though the two kinds of forces are not always, nor necessarily, opposed, it is assumed that both kinds of forces are operating in any A-B-X system that is significant enough to engage our interest.

If I seem to have digressed from the central theme of attraction, it is because of the need for a systematic framework in which to consider the possible forms that attraction may take. Within the particular framework that I have proposed, the dynamics of attraction (which is to say its orderly principles of stability and change) have to do with the development, maintenance, and restoration of balance within individual systems of orientation.

From such a viewpoint, three major categories of reward may be distinguished, as follows:

1. *A attributes to B "inherent" qualities that A likes.* He finds B jovial, or pleasant-voiced, and "likes" B for the same kinds of reasons, psychologically, that he likes gay waltz music or flavorful oranges. Such a reward basis for attraction might logically be labeled "liking," but since this term

has commonly come (though unfortunately, I think) to be used synonymously with "attraction," I shall label it *admiration*. This basis for attraction corresponds to the single solid line A ——→ B, in Figure 1.

2. *A attributes to B positive attraction toward A.* If A finds this rewarding, he is by definition attracted toward B. This kind of reward basis for attraction is most accurately referred to as "perceived reciprocal attraction," but will be briefly labeled *reciprocation*. The representation of this basis of attraction, in Figure 1, is the broken line B --------→ A.

3. *A attributes to B attitudes toward X which in some way resemble A's own attitudes toward X.* (Note that it is the *relationship* between A's own and B's perceived attitudes, not any "absolute" dimension of the latter, that determines B's reward value to A.) Insofar as the perceived resemblance is rewarding to A, he is attracted toward B. For want of a better term, this kind of reward basis for attraction may be labeled *perceived support*.

I have found it useful to make a further distinction among varieties of perceived support, following the classical trilogy conation-cognition-affection. Specifically, A may find reward in expectations of behavioral support—e.g., joint participation in activities that A likes, or in behavioral complementarity that is reciprocally need-satisfying [cf. Winch (10); in cognitive support—e.g., B's perceived knowledgeability or expertness about X]; or in evaluative support—e.g., being agreed with about a controversial issue. I have tentatively labeled these *role support, respect,* and *value support,* respectively.

There is another kind of B-to-X relationship which might be treated as a variety of attraction: B's perceived power over a valued X. If attraction is defined simply in approach-avoidance terms, this kind of relationship would have to be considered one of its varieties. I have chosen, however, to define attraction in terms of the reward value of the attractive person himself, and this definition does not necessarily include his instrumental value to some other object. It is a relevant fact that attitudes toward persons viewed as exercising power over valued objects are not necessarily favorable or necessarily unfavorable; such considerations suggest that this kind of instrumental reward value belongs, conceptually, with some category of interpersonal attitudes other than attraction. To put the matter somewhat differently, B's power over X is not likely to be perceived as rewarding unless accompanied by a B-to-A relationship of perceived reciprocation of attraction, in some form.

Observed Forms of Attraction in a Single Research Setting

To paraphrase a favorite remark of the late Professor Kurt Lewin, we understand things best when we observe them in change, and in par-

ticular if the changes are those that we ourselves have made to occur. This, of course, is the experimentalist's credo, and the investigator in "natural" as well as in laboratory situations can profit by taking it to heart.

For just such reasons I have been interested in observing the vicissitudes of interpersonal attraction within two populations of individuals initially brought together as strangers. Each population consisted of 17 male students at the University of Michigan, Sophomores and Juniors who had just transferred from other colleges and universities. No two of them, in either population, had ever attended the same college or lived in the same city; both prerecruiting and subsequent information indicated conclusively that each population was initially composed of total strangers. They were recruited as prospective students at this University who were willing to give four or five hours of their time each week, as respondents and experimental subjects, in return for free room rent "under fraternity-like conditions" for a full semester. All arrived on the same day, when they were told that the problem of "running the house" (including kitchen and dining-room) was theirs, subject only to standard University regulations.

From responses repeatedly made by each of the 17 initial strangers in each population, as they lived closely together over a 16-week period, it proved possible to develop indices (crude ones, at least) of each of the varieties of attraction that I have distinguished.[1] Somewhat oversimply, they are as follows.

admiration: number of favorable adjectives, out of 30 selected from the Gough list (3), that are checked by each *S* to describe each other *S;*

reciprocation: rating, on a 100-point scale, of the degree of favor or disfavor with which each *S* judges that he is regarded by each other *S;*

role support: frequency with which each pair of *S*'s is mentioned by other *S*'s as belonging in the same subgroup, by any criteria that the respondent deems significant (the assumption here is simply that if a pair of persons is reported by many others as doing something together, they are giving each other some sort of role support);

respect: rating, on a 7-point scale, by each *S* of each other *S*'s competence to arrive at a sound judgment about the attitude-object in question;

value support: degree of perceived agreement, derived from own responses and estimated responses of every other *S* to various agree-disagree types of attitude scales;

general attraction (GA): rating, on a 100-point scale, of the degree of general favor or disfavor with which each *S* regards each other *S*. (This may be considered a composite of all forms of attraction that influence the rater.) [2]

[1] The setting and the detailed findings of this study are to be presented *in a forthcoming monograph,* tentatively entitled *The Acquaintance Process.*

[2] For present purposes it is useful to transmute these various indices into ranks for each subject.

With so many variables and so little space in which to describe their vicissitudes and interrelationships, I can only present in very general terms a few selected findings. They will be selected to show (*a*) that individuals may provide diverse sources of reward to other individuals; (*b*) that within-population distributions of certain varieties of attraction change from early to late acquaintance; (*c*) that, viewed as independent variables, different sources of attraction may have different consequences; and (*d*) that, viewed as dependent, the attraction properties of whole populations, as outcomes of interaction among their members, may differ in significant ways.

Early vs. *Late Acquaintance*

For the present, I shall make no assumptions about the dependent-independent relationships between general attraction and its several subvarieties. Simply in terms of the observed association of the several attraction variables, I shall begin by contrasting these relationships on early and on late acquaintance.

TABLE 1

NUMBERS OF SUBJECTS WHOSE HIGHEST RANKS IN GA ARE ASSIGNED TO OTHER SUBJECTS AT VARIOUS LEVELS OF RECIPROCATION AND ADMIRATION, AT WEEKS 1 AND 15

RANK IN RECIPROCATION	N OF HIGHEST GA RANKS		RANK IN ADMIRATION	N OF HIGHEST GA RANKS	
	Week 1	Week 15		Week 1	Week 15
1	11	3	1	6	6
2–4	6	11	2–4	7	10
5–8	0	1	5–8	3	1
9–16	0	2	9–16	1	0
Total	17	17	Total	17	17

First, as shown in Table 1, very high perceived reciprocation becomes less closely associated with very high GA, over time, while very high admiration tends to become more closely associated with it. At Week 1, the contribution of reciprocation to GA is significantly greater than that of admiration ($X^2 = 5.95$, corrected for continuity; $p < .02$, with 1 df); at Week 15, the difference is nonsignificantly in the other direction.

More detailed analysis of the changes in reciprocation shows clearly that they do not result from greater accuracy of estimates at the later than at the earlier time; while the early sources of autistic distortion are different from the later ones, the over-all magnitude of their effects is, if anything, greater at the later than at the earlier time. Neither is the

closer association between reciprocation and GA at Week 1 than at Week 15 to be explained in terms of differences in the *direction* of estimate-errors; at both times there is a preponderance of errors in the direction of overestimating the degree of reciprocated attraction.

In another way, nevertheless, it is almost certainly an increasing recognition of reality factors that accounts for much of the declining association between perceived reciprocation and GA. A very considerable differentiation with respect to "popularity" developed and persisted in this population, following only a few weeks of acquaintance. At Week 15, three of the four most popular subjects made maximum estimates (i.e., Rank 1) of reciprocation in their Rank-1 GA choices; and all four of their lowest reciprocation scores involved Rank-1 GA choices of the same four popular persons, by others. In short, something like "admiration for those who are popular" tended to supplant reciprocation, at Week 15, as a determinant of GA. According to the present terminology, then, it appears that, for some subjects, as reciprocation becomes less important admiration becomes more so. GA comes to mean, for an increasing number of respondents, admiration for those who (being popular and in a position to choose others who are popular) are not expected to reciprocate the admiration.

Covariation of Some Varieties of Attraction

Turning now to the not infrequent instances of very high A-to-B attraction of one variety that is not accompanied by very high attraction of other varieties, let us see what is characteristic of them, following several months of acquaintance. First, when very high admiration is not accompanied by high perceived reciprocation, it is nearly always admiration by a younger or less popular participant for an older or more popular one. Conversely, very high perceived reciprocation not accompanied by high admiration is most likely to be found on the part of older and more popular students who recognize that they are admired by younger or less popular ones, but do not reciprocate it.

Very high role support (i.e., as observed and reported by others) is almost universally accompanied by high reciprocation, but not necessarily by high admiration. This discrepancy, again, is largely a consequence of differences in popularity: persons who are observed to spend much time together consider themselves attractive to those with whom they spend most time, whether or not they spend most time with those they admire. What is more interesting, perhaps, is the fact that some of the pairs that are actually highest in mutual attraction do not have high indices of role support. Of the 27 pairs highest in mutual attraction (the upper 20%), one quarter are mentioned by only 3 or fewer of the remaining 15 sub-

jects as observably frequent companions. Whatever role support is provided by any of these seven pairs of subjects for each other is obviously not very visible. Interview data suggest that the private sharing of personal intimacies, of religious interests, or of preprofessional quandaries were important bases of mutual attraction in these seven cases.

Perceived value support, finally, was of considerable importance, especially in clique formation. In terms of a rather high criterion of mutual attraction on the part of all within-group pairs, the 17-man population was divided into three relatively distinct subgroups as follows:

a 5-man clique whose members ranked 2, 3, 4, 5, and 9 in F-scale nonauthoritarianism; all were "liberal" in politics and in religion (they included 2 Jews, 2 Protestants, and a Catholic); all were in the arts college (rather than in engineering), and all were proud of their "intellectual" interests; 4 of the 5 were Easterners; in Spranger values they are, as a group, high in aesthetic, social, and theoretical values, and low in economic, polititical, and religious.

a 3-man clique whose members ranked 7, 12, and 16 in nonauthoritarianism, together with a semi-isolate "hanger-on" who ranked 17; the 3 central members were all veterans, and 3 of the 4 were in engineering; their interests were "practical" ones; in Spranger values they are, as a group, high in economic and religious values and low in political.

a 3-man clique whose members ranked 10, 11, and 13 in nonauthoritarianism; all were Midwestern, small-town Protestants, 2 of whom were in engineering; in Spranger values they are, as a group, distinctive only in being low in theoretical value.

The remaining 5 subjects included four rather extreme isolates, and one who was marginal between the first and second of the above cliques. This latter person ranked 1 in nonauthoritarianism, and fully shared the intellectual interests of the first clique; 2 of the members of the second clique were his roommates and, as one of the youngest House members, he admired their maturity and was "protected" by them.

The mutiple bonds involved (by definition) in high-attraction clique membership are not likely to be supported only in private but also in observable ways. At any rate, the kinds of value support that seem to distinguish the three cliques represent eminently "discussable" issues; and, judging from interview responses, the kinds of interests described above were in fact much discussed within each of the three cliques. And it is probably no accident that Group I, which had the most distinctive pattern of shared interests, was widely regarded as being a particularly voluble group.

Dependent and Independent Attraction Variables

I have tried, so far, only to show that persons may provide diverse sources of reward to other persons, and that among one population it can

rather easily be shown that to the same individual different persons are most highly rewarding in different ways. The answer to the question of what difference these distinctions make will vary with whether we are considering attraction as a dependent or an independent variable.

Attraction Variables as Dependent

There are, as I believe, certain general propositions in terms of which interpersonal attraction can always be understood, in the sense that much of the variance is accounted for. But it is also true, here as elsewhere, that the specific manner in which these general principles operate in specific cases varies, particularly with personality and with situational factors. The foregoing distinctions among theoretically required sources of reward have been offered as one approach to the problem of exactly *how* it happens that different individuals, or the same individuals in different circumstances, may find their interpersonal rewards in different ways while at the same time conforming to the same theoretical principles.

Let us assume that within a given population the same person finds different individuals most rewarding in different ways. Let us assume also that individuals differ as to the relative importance to them of different kinds of reward. It would seem to follow, then, that whatever person an individual finds most rewarding in the way that is most important to him will have the greatest reward value for him. Thus, if one is asking, with regard to *general* attraction as a dependent variable, "Within a given population, what determines each member's rank-ordering of attraction toward the other members?," the most relevant parameters would be (*a*) the individual's hierarchy of "appetites" for reward and (*b*) the reward possibilities that other members have to offer. Neither of these, of course, is necessarily fixed and unchanging; rather, both tend to change through the processes of acquaintance and through experiences of reciprocal reward. Also, there are interactional effects at the phenomenological level; i.e., the reward possibilities that one perceives in others will in part be determined by what one is looking for.

The parameters are essentially the same if one asks a somewhat different question: "What determines the specific nature of reward as one individual is attracted toward another?" If the same individual, A, is attracted toward B primarily on the basis, say, of perceived reciprocation, and toward C primarily on the basis of admiration that is not perceived as reciprocated, the difference may be attributable solely to the differential reward possibilities that B and C offer (perhaps by reason of differential frequency of contact, or perhaps by reason of greater "competition" for reciprocation by C than by B). But for another individual

either or both of these sources of reward might be an inadequate basis for any very strong attraction—if, for example, perceived value support is to him a necessary condition for strong attraction.

I shall present only one illustration from my own data. In the second of the populations that I have studied (and from which the preceding data are drawn), those individuals for whom general attraction was most closely associated with perceived value support were, almost without exception, very low in F-score authoritarianism. As a consequence, these individuals were highly attracted toward each other, and formed a highly cohesive subgroup. This was not at all true of the Year-I population, whose cohesive subgroups were not particularly characterized by value support, and whose lowest F-scorers did not tend to be attracted toward each other. A possible interpretation of these differences may be seen in the fact that the five lowest F-scores in the second population were all below the lowest in the first population. In view of the finding, reported by Christie & Cook (2), that low F-scorers tend to be more sensitive to others' attitudes than are high scorers, it is possible to infer that a basic difference between the two populations lay in the different distributions (significant at .05) of their F-scores. For each of the five very low scorers in the second population, the relevant determinants of attraction toward the others would include both his own low-authoritarian value system and the objective fact of the presence of others with similar value systems.

Attraction Variables as Independent

Stability of high attraction. I shall mention but two kinds of consequences of different forms of attraction. First, the persistence of a given state of high A-to-B attraction appears to require some sort of perceived reciprocity—not necessarily as I have attempted to measure it, but at least in some form of role support or value support. According to my own data, the cases of merely transitory high attraction were often those in which "admirers" judged that they had either lost or failed to get reciprocation in any of these forms. The most "solid" and enduring attraction-pairs were those in which both members perceived both reciprocation and support, though not necessarily admiration on the part of both.

There are compelling theoretical reasons why this should be so, under conditions of adequate opportunity for mutual acquaintance. These reasons have to do with the facts that (*a*) the experience of being rewarded by another person is likely to be accompanied by behavioral cues indicating that one has been so rewarded; and (*b*) the receipt of information that one has been rewarding to another is likely to be rewarding. Rewarding experiences by A as he interacts with B tend to be followed by rewarding experiences by B. Thus increasing (and, by analogy, decreasing)

attraction tends to be reciprocal. As for the five categories of reward that I have distinguished above, three (reciprocation, role support, and value support) presuppose such reciprocal rewards—phenomenologically, but not necessarily in actual fact. The other two (admiration and respect) do not necessarily presuppose such reciprocality but, according to my own data, are very commonly associated with it; the principal exceptions involve marked discrepancies in some dimension of status, as perceived by one or both interactors.

Population structuring. Second, the nature of *within-group structuring* seems to vary with the distribution of the varieties of attraction among members, though in rather complex ways. In my Year-I population, the final structure was "stringlike"—i.e., composed of several small and only loosely interconnected subgroups. The Year-II population had a clearly apparent central substructure (the 5-man clique described above) with which the other cliques had close bonds (via a single pair, in one case, and via multiple though nonoverlapping pairs in the case of the remaining clique). The most crucial difference between the two populations is almost certainly that most members of the loosely structured population relied more heavily than did those of the Year-II population upon perceived reciprocation rather than upon admiration or value support. Specifically, the more popular members of the second population, but not of the first, were attracted to each other, and thus each of them tended to carry along with him, so to speak, several admirers. Since nearly every one was an admirer of at least one of the popular members, and since many of their admirers received some form of reciprocated high attraction from one or more popular persons, the consequent structure of the total population was that of a strong central organization with outlying smaller cliques and isolates, after the manner of satellites.

This kind of structure would not have developed or persisted, however, without reciprocal role support and value support among the more popular members. These—rather than perceived reciprocation of GA—were the forms of attraction that, in the Year-I population, were lacking among the popular persons. The correspondence between very high GA and perceived reciprocation of very high GA was probably closer in the first, loosely structured population than in the second, centrally structured one.[8] Thus according to my own data, at least, perceived support is a more important contributor of centrality of structuring than is perceived reciprocation of GA.

[8] Strictly comparable data, unfortunately, are lacking for the first population. But if, as my own data as well as those of others suggest (9), there is a dependably close correspondence between very high GA and perceived reciprocation of very high GA *except* in the choice of those known to be very popular, then the above statement is probably correct. The extremes of popularity, and the degree of consensus about it, were markedly greater in the second than in the first population.

But perceived support—and in particular perceived *value* support—itself has an important precondition. Given adequate opportunity for acquaintance, including acquaintance with each others' value systems, perceptions of value support tend to be reasonably accurate. There must be a basis in fact for judgments of reciprocal value support, if the latter are to provide a solid base for stable group formation.

In sum, two kinds of conditions appear to determine centrality of population structuring, according to my findings: individual differentiation with respect to popularity, and value support (both actual and perceived) among those who are most popular.

What about the generalizability of such a finding? Certain hypothetical extensions, in more general form, may be offered, though I know of no existing data by which to test them. These generalizations are intended to take into account important situational variations. For example, my own research setting was one which minimized task-orientation and maximized person-orientation—a fact which almost certainly had important consequences.

The first condition (individual differentiation in popularity) should, if it is to be applicable to a wide range of situations, be extended to include any form of consensually recognized individual status that is situation-salient. In certain task settings, for example, respect for another's skill or knowledgeability would be more relevant to group structuring than personal popularity, which was the most salient form of differentiation in personal status in my own research setting.

A similar extension of the second condition (value support among those high in status) may be ventured. The nature of the attraction relationship among high-status individuals (insofar as it is relevant to centrality of structuring) need not, I suspect, be restricted to "value support," and certainly not to the very broad and general meaning that is implied by my own use of such categories as Spranger's values. Some form of perceived support—i.e., perceived commonality of orientation to salient features of the common environment—is required, I believe, quite apart from sheer personal "liking" and perceived reciprocation. In short, the bases for attraction among high-status individuals, if centrality of structuring is to be expected, must be not merely private to those individuals, but must include bases sufficiently public as to be sharable by others of less high status. Thus, in terms of the present vocabulary, either role support, or respect, or value support—if shared by high-status individuals *and also* between them and at least some others—could serve as adequate forms of attraction among high-status individuals.

Thus the degree of centrality of structuring, within a face-to-face population small enough to permit personal acquaintance, hypothetically varies more directly with some forms of attraction than with others. More

specifically, centrality is hypothesized to vary directly with degree of differentiations in personal status that are consensually recognized and that are important to the group; and with the degree of attraction that exists among such high-status individuals, provided that this is based upon reciprocal support that is observable to others and not merely private in nature.

Summary

On the basis of a theoretical framework devised for other purposes, the following subclasses of interpersonal attraction have been distinguished: admiration, reciprocation (judged general favorability of another toward the self), role support, value support, respect, and general attraction (a composite of all other forms of attraction). Indices of each of these, as applied to a particular set of research data, have been described. Findings have been presented to show (*a*) that general attraction following long acquaintance is differently compounded of certain subclasses of attraction than an early acquaintance; (*b*) that the interrelationships among the subclasses change with acquaintance; (*c*) that individual variations in differential contribution of the subclasses to general attraction are related to certain personality differences; (*d*) that certain subclasses tend to be more stable than others; and (*e*) variations in within-population emphases on one rather than another form of attraction are associated with differences in population structuring.

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6

Reference Group Processes in a Formal Organization

Jay M. Jackson

There seems to be ample evidence now that a person's attraction to membership in a group or organization is one of the major determinants of his behavior (1, 8, 9, 10, 15, 19, 24, 25). What the sources of attraction are for different types of persons and groups, what processes mediate attraction to a single or competing groups, under what conditions these processes occur—these and many related questions within the general theory of reference group behavior (20) are still relatively unanswered by precise empirical determination. This paper reports research directed toward increasing understanding of some of these reference group processes.

The investigation began with a number of commonly held and overly simple assumptions about the nature of persons and groups. First, it seemed safe to assume that a person in his relations with others is constantly attempting to maximize his personal gratification and to minimize his deprivation. Since personality was not a focus of the study, the important question of which needs would be satisfied in what type of interpersonal relations was not specified. It was simply assumed that all persons to some degree seek approval rather than disapproval in their social relations.

Second, it was assumed that all groups and organizations generate an informal prestige system in addition to their formal status and authority structure. Although there is controversy as to whether such stratification processes in a social system are functional or dysfunctional (5, 6, 28, 29) there seems to be general agreement that they do occur. The allocation of prestige to members of a system is determined to a considerable degree on the basis of compliance with its shared standards and contribution to its explicit purposes (2, 18). Although there are many ways in which

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valuing or devaluing of a member can be expressed formally, much of the allocation and transmission of prestige symbols in groups and organizations occurs via person-to-person interaction. The cues made available are often extremely subtle, especially when disapproval is involved; but most persons develop highly sensitive if not always reliable antennae for sensing slight indications of approval or disapproval in others' behavior toward themselves.

It was assumed, too, that the prestige symbols or indications of social approval and disapproval sensed by a person in his relations with others were directly related to the magnitude of his personal gratification or deprivation. His ego needs would be satisfied or denied to the degree that he perceived others valuing or devaluing him in his role as a member of the system (18).

A hypothesis that follows readily from these assumptions is that *the more highly valued a person perceives himself to be by others in his group, the greater will be his attraction to that group.* This generalization was tested with questionnaire data obtained from two groups of boys and two groups of girls who had been together for several years as members of homerooms in a high school.

The results, although too inconclusive to be reported here in detail, did have an effect upon the subsequent direction of the research. No relationship was found between a subject's *perception of being valued* and his attraction to the group. In one group, however, there was a significant positive relationship between *actually being valued* by the other members and the degree of attraction to the group. Analysis of the distribution of ratings and interviews with the teachers of these groups suggested that the existence of highly valued cliques and consequent barriers to communication might be a factor contributing to the findings. Members of cliques, although highly valued, had relatively low attraction to the group as a whole. In the presence of restraints against communication a person's perception of others' evaluations would be less accurate since less affected by the receipt of interpersonal prestige symbols. In reporting how much he was valued by others, a person also apparently felt systematic tendencies to distort: downward tendencies arising from modesty or cultural pressure if he was in fact highly valued; and marked defensive tendencies to overestimate if he was accorded low social worth by his peers.

The results of the exploratory research led to a formulation of the original hypothesis in less phenomenological terms. A person's perception of how much he is valued by others might be too responsive to distorting forces arising either from personality needs, cultural demands, his position in the social structure, or the measurement situation itself. His attraction toward one group or another might be a response to a

multitude of subtle cues implicit in interaction with others without any necessary awareness on his part that the totality of cues signified that *he was valued.* Thus so long as a person has sufficient interaction with a group of others in the context of activity directed toward the achievement of group objectives or the maintenance of group integrity, his attraction should be proportional to his *social worth,* i.e., how much he is objectively valued by others, irrespective of whether or not he accurately perceives their evaluation of him.

In a complex social system that is differentiated into functional subgroups, such as a community or a social organization, a person interacts with members of other groups as well as of his own. His activities have repercussions beyond the boundaries of the group to which he formally belongs. Thus processes of evaluating the contribution of members to the objectives and maintenance of the larger system occur throughout the system. The social worth accorded a person by members of his own group may or may not correspond to that given him by members of other groups in the organization. Assuming that the person is sensing evaluative cues in his interaction with members of many different groups in the organization, he should be most attracted to the group where his social worth is highest and least attracted to belonging to the group where he is least valued.

The above thinking can be summarized in the following hypotheses which were tested in the research reported in the balance of this paper.

1. *In any group or organization a person's attraction to membership will be directly related to the magnitude of his social worth.*
2. *The magnitude of the positive relationship hypothesized in (1) will vary directly with the volume of interaction the person has with other members of the group or organization under consideration.*
3. *Where alternative group orientations are possible for a person his relative attraction to membership in one or another group will be directly related to his relative social worth in the groups considered.*
4. *The magnitude of the positive relationship hypothesized in (3) will vary directly with the volume of interaction the person has with other members of the groups under consideration.*

Method

Population

The research utilized as subjects the 72 staff members of a child welfare agency in a midwestern state. The "Midwest Social Agency" was selected for the study because it met with criteria of size, convenience, and the demands of the theoretical problem. The entire staff participated in the

study, with the exception of a psychologist and a psychiatrist.[1] There were 64 women and 8 men ranging in age from twenty-one to sixty-three with the mean age approximately forty. Each person occupied a position with a formal status designated by civil service. These positions were on two different status scales, one of five strata for professional workers and one of seven strata for nonprofessionals. There were 46 professionals and 26 nonprofessionals in the sample. The professionals were almost all social workers with the exception of a nurse and a business executive. The nonprofessionals had more varied occupations: stenographers, typists, bookkeepers, housemothers, recreation workers, cooks, a stores clerk, and a janitor. In duration of employment with the agency the subjects ranged from 25 years to two months with mean length of service slightly over five years. About half of the subjects were married.

Research Plan

To test the hypotheses stated above a situation was required in which individuals were members of subgroups as well as members of a larger organization. The first step in the research, reported in detail elsewhere (13, 16), was to determine each person's actual work group affiliation. A questionnaire was administered to the total staff in which each member was asked to list the groups to which he belonged, the purpose or function of these groups, and the other persons who also belonged to them. Analysis of these data led to the location of each person in one of six work groups. The resultant work group structure corresponded closely to that shown on the formal organization chart but resolved a number of ambiguities therein.

One month after the administration of the initial questionnaire subjects filled out the Personal Contact Checklist, described below. A copy of this instrument was mailed to each staff member at his home and mailed directly back to the investigator.

A month later a final mailed questionnaire was used to obtain data about each subject's *social worth* and his *attraction* to both his work-group and to the total organization.

Frequency of Contact

The Personal Contact Checklist, a sociometric-type questionnaire, was used to obtain measures of the frequency of interpersonal contact in the organization. This instrument was adapted from one used by Jacobson and his colleagues (17). It is also similar to procedures reported by

[1] Owing to absences and incomplete responses, data were available for the analysis reported here from only 63 members of the staff.

Stogdill (26) and is a development of ideas originally suggested by Moreno, Jennings, and Sargent (21).

Each subject was given an alphabetical list of the entire staff of the Midwest Social Agency. Opposite each name he had to indicate the frequency, nature, and importance to him of his contacts with that person. Frequency was checked on a five-place scale. Responses were given a numerical weighting to obtain frequency of contact, as follows: *Several Times Daily* = 100; *Daily* = 50; *2 or 3 Times Weekly* = 25; *Several Times Monthly* = 5; *Several Times Yearly* = 1. It was then possible to rank the respondents according to the total frequency of contact which other members reported *having with them.* This was considered to be a more reliable and valid measure than the amount of contact an individual reports having with others since it is based on a large number of individual reports. The total sample was split at the median frequency of contact score to obtain *high contact* and *low contact* groups.

Measures of Social Worth

A measure was obtained of how much each person valued every other person on the staff, both in the context of his organizational memberships and of his work group membership. In addition each person was asked to report how much he thought every other person valued him in each of these contexts. The questionnaire consisted of a list of persons from whom the selection was to be made and instructions as to the criterion of choice. The following instructions were used for the total organization sociometry:

> When answering the following questions, please think of the staff of the entire Agency, not just your own department. In the Midwest Social Agency it is likely that some people make a greater contribution than others to what you think of as the organization's goals. These people may or may not be the ones with the highest positions. If, however, you think that they make the greatest contribution to the organization's goals, they are the ones whose absence would be felt most. In this sense, they are the *most valuable.*

Subjects were then asked to select the ten persons they considered most valuable from a list of the entire staff. After a respondent had completed this task and had answered a number of other items in the questionnaire he was asked to predict who would choose him on the above sociometry, by checking the name of "each person who you think will select you."

The entire procedure was repeated later in the questionnaire in the context of the respondent's work group membership instead of his organizational membership. Only the names of the respondent's work group were listed on this item. The number of persons chosen varied with the size of the subgroup, being approximately 30% of the *N* of the group.

The different probabilities of being chosen were taken into consideration in the analysis.

Scales for Measuring Attraction

Attraction to the organization and to a person's work group were measured by two different scales: one to measure attraction to the people in a group and the other to measure the amount of benefit the respondent felt he was receiving by belonging to the group. These two scales were called *Attraction-People* and *Attraction-Benefit.* They correspond to two of the "sources" of attraction which Back used in his laboratory experiment: "Personal Attraction" and "Task Direction" (1).

The scales were developed in a series of pretests using a modification of the Method of Paired Comparisons (12) which Coombs in his theory of data categorizes as "Order 3, Task B" (3). The steps in the construction of these scales and the items themselves are described elsewhere (13).

A problem arose in employing the attraction scales in the Midwest Social Agency. The agency clearly was an attractive place for most of the staff members. There was a danger, therefore, that the attraction scores would all pile up on the high end of the scale. Yet there was a limit to the number of positive-sounding statements that could be discriminable steps on a scale. The difficulty was handled by using a method of presenting the scales which corresponds to Coombs' "Order 2, Task A" (3). The subject is asked to order two statements with respect to their closeness to his "ideal" position on the scale. As long as the data by falling into a certain pattern support the assumption that an underlying attribute exists, the number of score categories is increased with this method from n, if the subject had been asked to indicate the one statement with which he agreed most, to $2(n-1)$, where n equals the number of statements on the scale.

There were 7 statements in the Attraction-People scale and 6 in the Attraction-Benefit scale. Analysis of the data obtained in the Midwest Social Agency supported the assumption that they were true scales. For 5 presentations to 63 subjects, only 4 out of 315 responses were nonscale responses.

Results

Hypotheses were tested by computing Pearson product-moment correlations between measures of attraction and social worth. Since data had been obtained in both total organization and work group contexts it was necessary to use the appropriate scale and sociometric scores when com-

puting a correlation. The measure used for social worth in a work group context was the number of choices the person received divided by the number he would have received by chance if all choices made had been distributed equally among members of the group.

In Table 1 it is seen that the first hypothesis is supported when Attraction-Benefit is the measure used but not with Attraction-People. The initial theorizing simply assumed that a person would obtain gratification from interacting with others who valued him. It did not specify the nature of the interpersonal rewards nor distinguish between different sources of attraction.[2] These results suggest, if the theory is correct, that the interpersonal rewards received by highly valued persons consist to a considerable degree of tangible or intangible benefits they feel they are receiving because of their membership in their work group or the organization.

TABLE 1

RELATIONSHIPS BETWEEN ATTRACTION AND SOCIAL WORTH

VARIABLES AND CONTEXT	r	p *	N
Attraction-People and *Social Worth*			
Total Organization	.16	.21	63
Work Groups	.16	.21	63
Attraction-Benefit and *Social Worth*			
Total Organization	.28	.02	63
Work Groups	.31	.01	63

* Two-tail tests are used throughout this paper since the initial hypotheses were in general form and did not specify the context, source of attraction, nor subpopulation for which predictions would be true.

What a member of the Midwest Social Agency might perceive as a benefit could vary a great deal, ranging from his salary to his perceived professional development in that organization or a subgroup. It would differ for persons depending upon their characteristic motivations or life goals. One would expect it to differ considerably for professional and nonprofessional workers. In Table 2 it is clear that a relationship between attraction and social worth exists only for professional workers. For nonprofessionals the relationships are not significant using either measure of attraction in both organization and work group contexts.

These findings partially support the first hypothesis but they impose restrictions upon its generality. It seems to be true only for a particular

[2] The most positive statement on the Attraction-Benefit scale was "I feel I am receiving a tremendous amount of benefit by working there." On the Attraction-People scale the most positive statement was "I look forward with enthusiasm to the pleasure of working with them."

category of persons, what might be seen as the superior stratum in a caste system; and it applies only when particular gratifications are being received, those relevant to the motivations of that category of persons. The benefits perceived to be available in the Midwest Social Agency, as in any organization with professional objectives, are accessible only to members of the professional caste or at least have valence only for them. These benefits might include participation in policy decisions, consultation on cases, interesting and informative discussions, and other types of experience. If these gratifications were not available the professional worker could easily turn toward some other group or organization.

The rewards available to the nonprofessional in the organization appear to be of a different order. Nonprofessionals do not work *with* the

TABLE 2

RELATIONSHIP BETWEEN ATTRACTION AND SOCIAL WORTH FOR PROFESSIONAL AND NONPROFESSIONAL WORKERS

VARIABLES AND CONTEXT	PROFESSIONALS (N = 45)		NON-PROFESSIONALS (N = 18)	
	r	p	r	p
Attraction-People and *Social Worth*				
Total Organization	.18	.24	.08	.74
Work Groups	.19	.21	.04	.87
Attraction-Benefit and *Social Worth*				
Total Organization	.30	.04	.16	.53
Work Groups	.37	.01	.11	.67

others in the system but *for* them. They make indirect rather than direct contributions to the goals and maintenance of the system. Upward mobility is not possible because of caste barriers. It is likely that the benefits they receive are a function of their remaining members of the organization rather than being prestige symbols mediated by person-to-person interaction.

Findings relevant to the second hypothesis, that the relationship between attraction and social worth is a positive function of the amount of interaction, are presented in Table 3. The hypothesis is clearly supported by these relationships. For those with high contact three of the four correlations are significant at an acceptable level; for those with low contact none of the correlations approach significance. Differences between correlations for those with high and low contact, using the Attraction-Benefit scale, reach the .10 level in the total organization context and the .15 level in the work group context. Although not significant they are consistent with the initial theorizing.

Controlling on the amount of interpersonal contact also brings to light a significant relationship between Attraction-People and social worth in a work group context for those with high contact. The findings with this scale parallel those found with Attraction-Benefit but are weaker. Since

TABLE 3

RELATIONSHIP BETWEEN ATTRACTION AND SOCIAL WORTH FOR PERSONS WITH HIGH AND LOW INTERPERSONAL CONTACT

VARIABLES AND CONTEXT	FREQUENCY OF CONTACT			
	High (N = 31)		Low (N = 32)	
	r	p	r	p
Attraction-People and *Social Worth*				
Total Organization	.25	.18	.06	.74
Work Groups	.37	.04	.04	.83
Attraction-Benefit and *Social Worth*				
Total Organization	.43	.02	.02	.90
Work Groups	.50	.004	.17	.35

the two scales are correlated .47 in the total organization context and .61 in the work group context, it would appear that the gratification of working with others in the Midwest Social Agency represents part of the total sum of benefits obtained and contributes to over-all attraction to the work group and the organization, at least for professional workers.

TABLE 4

RELATIONSHIP BETWEEN ATTRACTION AND SOCIAL WORTH FOR PROFESSIONALS WITH HIGH AND LOW INTERPERSONAL CONTACT

VARIABLES AND CONTEXT	FREQUENCY OF CONTACT			
	High (N = 22)		Low (N = 23)	
	r	p	r	p
Attraction-People and *Social Worth*				
Total Organization	.29	.19	.01	.97
Work Groups	.43	.04	−.09	.69
Attraction-Benefit and *Social Worth*				
Total Organization	.55	.006	.15	.49
Work Groups	.66	.001	.15	.49

In Table 4 the relationships between the two major variables controlled by frequency of contact are presented for professional workers only. Those for nonprofessionals have been omitted, being uniformly small and nonsignificant. A comparison of these results with those in

Table 3 shows considerable similarity. The correlations for those with high contact are uniformly higher than for the total sample when data from only professional workers are used, with significance levels essentially the same. Differences between correlations yield probabilities of .10 for the Attraction-People scale in a work group context, and for the Attraction-Benefit scale .10 and .05 in the total organization and work group contexts respectively. The second hypothesis, like the first, is supported for professional workers but not for nonprofessionals.

The findings presented thus far suggest that the postulated reference group processes are more intensive within a work group context than in the organization at large. This conclusion is supported by the consistency of the magnitude of correlations already presented, seen in Table 5. In

TABLE 5

CONSISTENCY OF FINDINGS PRESENTED IN SUPPORT OF FIRST TWO HYPOTHESES

Variables	Context	Correlations With Social Worth			
		Total Population ($N = 63$)	Professionals Only ($N = 45$)	High Communication ($N = 31$)	Profess. High Commun. ($N = 22$)
Attraction-People	Total Organization	.16	.18	.25	.29
Attraction-People	Work Groups	.16	.19	.3[illegible]	.43
Attraction-Benefit	Total Organization	.28	.30	.43	.55
Attraction-Benefit	Work Groups	.31	.37	.50	.66

seven out of eight comparisons the relationship between attraction and social worth is higher in a work group context than in the total organization; in the eighth case they are equal. In all eight comparisons the relationship is higher with the Attraction-Benefit scale than with the Attraction-People scale when the context is held constant, pointing to the relative strength of these two sources of attraction for professional workers.

The third hypothesis stated that, where alternative group orientations are possible for a person, his relative attraction to membership in one group or another would be directly related to his relative social worth in these groups. It was tested by correlating a person's attraction to his work group with a measure of *relative social worth,* i.e., how much he was valued by the members of his work group relative to how much he was valued by members of all the other work groups in the organization. The

specific operation was the proportion of choices received from his own work group minus the proportion of choices received from members of all other work groups, plus 100 to make all the scores positive. It was assumed that the attraction measures were already relative, since any attraction to membership in other work groups in the organization would make a person's own work group less attractive. This assumption is consistent with Festinger's definition of attraction as "the resultant force to remain in the group" (10).

The correlations relevant to this hypothesis are seen in Table 6 to be

TABLE 6

RELATIONSHIP BETWEEN ATTRACTION AND RELATIVE SOCIAL WORTH

VARIABLES	CONTEXT	r	p	N
Attraction-People and *Relative Social Worth*	Work Groups Work Groups (relative to rest of the organization)	.22	.08	63
Attraction-Benefit and *Relative Social Worth*	Work Groups Work Groups (relative to rest of the organization)	.20	.12	63

positive for both attraction scales although they do not attain an acceptable level of significance. If the hypothesis is correct, two different factors could be acting to decrease the size of these correlations. First, the operation used to measure relative social worth was essentially crude. It makes an assumption which is probably incorrect, that the force of attraction induced by being valued in a person's work group is equal, *per unit of being valued,* to the force induced by being valued outside his work group. It is likely, however, that the actual relative strength of opposing forces varies from individual to individual depending upon specific conditions.

It is also likely that the heterogeneity of the population was obscuring some of the true relationship since the first two hypotheses were supported only for professional persons in the organization. In view of the commonly asserted marginality of a supervisor's role (23, 31) it also seemed important to investigate possible differences between supervisory and nonsupervisory personnel. The correlations in Table 6 were recomputed, therefore, omitting from the sample seven persons who were responsible for active supervision; these correlations were found to be .24 for Attraction-People and .36 for Attraction-Benefit, significant at the .07 and .006 levels respectively. In Table 7 correlations between the same variables are presented for both nonsupervisory personnel, professional, and nonprofessional. The results here support the generalization that a

person's attraction to his own group is directly related to his being more highly valued by its members than he is by members of other groups; with the qualification, however, that this may apply only to professional,

TABLE 7

RELATIONSHIP BETWEEN ATTRACTION AND RELATIVE SOCIAL WORTH FOR PROFESSIONAL AND NONPROFESSIONAL NONSUPERVISORY PERSONS

VARIABLES	CONTEXT	PROFESSIONALS (N = 38)		NON-PROFESSIONALS (N = 18)	
		r	p	r	p
Attraction-People and *Relative Social Worth*	Work Groups Work Groups (relative to rest of the organization)	.30	.07	.07	.78
Attraction-Benefit and *Relative Social Worth*	Work Groups Work Groups (relative to rest of the organization)	.35	.03	.32	.19

nonsupervisory personnel. An attempt will be made to understand this restriction in the light of reference group processes after the results which

TABLE 8

RELATIONSHIP BETWEEN ATTRACTION AND RELATIVE SOCIAL WORTH FOR PROFESSIONAL NONSUPERVISORY PERSONS WITH HIGH AND LOW CONTACT

VARIABLES	CONTEXT	FREQUENCY OF CONTACT *			
		High (N = 15)		Low (N = 23)	
		r	p	r	p
Attraction-People and *Relative Social Worth*	Work Groups Work Groups (relative to rest of the organization)	.61	.01	−.16	.48
Attraction-Benefit and *Relative Social Worth*	Work Groups Work Groups (relative to rest of the organization)	.51	.05	.16	.48

* The unequal N's in this table are accounted for by the fact that the seven supervisors omitted from the analysis all fell in the high contact category.

test the fourth hypothesis have been presented. The latter are summarized in Table 8, where professional, nonsupervisory respondents are categorized according to their frequency of interpersonal contact.

Using the Attraction-People scale, the difference between correlations is significant at less than the .01 level of confidence. With the Attraction-Benefit scale the difference does not reach an acceptable level of significance. Considering the magnitude of the differences, the size of the groups involved, and the over-all consistency of the findings with the predictions, however, it appears that the null hypothesis can be rejected without too much risk. Thus the evidence provides support for the hypothesis that the relationship between attraction and social worth considered in the context of multiple group orientations is directly affected by the frequency of interpersonal contact among persons in a social system.

The hypothesis dealing with multiple group orientations did not appear to be true for persons in supervisory positions, however, a finding that demands some consideration. The initial generalizations were derived from assuming that the activities of persons in a complex social system are continuously evaluated by others throughout the system, and that the persons will be attracted toward or away from membership in alternative subgroups in a pattern corresponding to the distribution of gratifications they receive by interacting with others. A supervisor is in a special situation, however, since he belongs both to his work group and to another group which may be termed "management," composed of all persons in supervisory or administrative positions. He interacts frequently with the other members of the latter group and participates in its prestige system. It is likely that it becomes his primary reference group in the organization and that he is especially sensitive to the evaluative cues he senses in interaction with members of this group. If a supervisor is highly valued throughout the organization for the contribution he makes, it is in his role as a member of management. Do the attendant gratifications he receives induce forces upon him to leave his work group and move to a different position in the organization? On the contrary it is likely that he will perceive these rewards as directly dependent upon his position as supervisor of his work group and that, the greater his social worth outside of this group, the more attractive this position will be to him. Thus a supervisor's attraction to his work group may depend more upon how much he is valued outside of the group than within the group itself.

It would be predicted from this line of reasoning that inclusion of supervisory personnel in the sample would decrease the relationship between attraction and relative social worth. This does in fact occur. The correlation is .36 without supervisors and .20 when they are included, changing the significance level from .006 to .12, using the Attraction-Benefit measure. Similarly when only persons with high frequency of contact are considered, the correlation decreases from .45 to .17 with the inclusion of supervisors, a change in significance level from .03 to .36.

From the foregoing presentation of results, it seems apparent that the

hypotheses and the assumptions from which they were drawn receive considerable support. The findings also point more specifically to the populations, conditions, and contexts in which the generalizations may hold true. One other aspect of the research needs to be considered. It may be recalled that the exploratory investigation of reference group processes reported briefly at the beginning of this paper led to the formulation of hypotheses in objective rather than phenomenal terms. A parallel analysis was undertaken of data obtained in the Midwest Social Agency, utilizing measures of *Perceived Social Worth* rather than its objective counterpart. Correlations were computed in both situational contexts, for high and low contact groups, for professionals and nonprofessionals, for supervisory and nonsupervisory personnel, and for work groups relative to the rest of the organization. None of the relationships found in this entire analysis even approached statistical significance.[3]

Discussion and Conclusions

Phenomenal vs. *"Objective" Levels of Analysis*

The decision to employ an "objective," i.e., consensual, level of analysis rather than a "subjective" one was influenced by the results of the exploratory study. Some positive relationship had been found between a person's attraction and his social worth computed by compounding the evaluations of other members, but none when his perception of his social worth was used in the analysis. Although the larger systematic issues of psychological theory cannot be dealt with here, these findings require some explanation.

The area of investigation called "person perception" has been undergoing a critical re-examination recently, resulting in a reformulation of many of its central problems. Thus the question of whether persons are generally accurate in their perception of others' feelings is no longer considered meaningful in that form, since the concept "accuracy" itself subsumes a large number of parameters that vary independently. Cronbach's statement sums up the state of knowledge about this question: "It would be foolhardy to state *what* has been shown by studies to date, but nonchance relations of some sort have been found in the majority of studies" (4). Tagiuri says that with respect to *self-referent accuracy,*

[3] A laboratory experiment was conducted by Wolff (30) to replicate the major findings of this study. He found that in a face-to-face group where cues were made available experimentally to subjects that they were making valued contributions, both objective social worth and perceived social worth were positively related to subjects' attraction to the group. When, however, the cues were designed to signify to subjects that they were not valued, there were no such relationships. These findings are in accord with Tagiuri's conclusions, discussed in the following section (27).

which he uses to describe the particular problem under consideration here, there is evidence that persons are more accurate than chance about those who choose them but not about those who reject them (27). One needs to be cautious, however, in generalizing his conclusions based on the criterion of *liking* to the present study's criterion, *valuing*, since the conceptual dimensions of the two terms are considerably different and the interpersonal processes involved may also differ.

Regardless of whether a person's perceptions are accurate or inaccurate, however, why is it that his attraction to membership does not vary according to what he perceives rather than to the objective situation? It is easy to adopt an extreme phenomenalism about human behavior and assume that a person is always responding to his private picture of reality. But perception includes all the fleeting, vague, ambiguous, and disorganized signs that pour in upon the person. True, he is constantly attempting to organize them into a meaningful pattern, to focus upon those which are central and salient and to ignore the rest. Yet clearly this selectivity must of necessity ignore the vast majority of his sensations, if one may use this classical term, among which may be the significant signs that he is valued or not. Thus the person's behavior might be steered by the total flux of incoming percepts and the gratification-deprivation value they have for him, whether or not he is able to organize them into a meaningful conception and is aware of the meaning. The fact that a person's attraction varies directly with the actual evaluations of others with whom he interacts but is not related to his perceptions of how much they value him seems to require some such interpretation.

Direction of Causality

The correlations in the data have been accepted as evidence in support of a particular model of reference group processes, one in which a prestige structure generates a pattern of evaluative signs that is communicated by means of interpersonal contact among members of the system and which affects their desire to belong. Common to all such cross-sectional studies is the problem of causal direction. Why would it not be just as correct to say that if a person is highly attracted to membership he attains relatively higher social worth and that the former causes the latter? Certainly there is ample justification in the literature for maintaining that attraction causes conformity (1, 7, 8, 10, 15, 24), or even high productivity if group standards call for it (25). The assumption has already been made above that the allocation of prestige is based on compliance with group norms and contribution to group goals. Thus the generalization that the strength of a person's attraction to membership determines his social worth appears to be an equally acceptable interpretation of the results.

If attraction indirectly causes social worth, however, it is not clear why a high level of interpersonal contact is necessary for the process to occur. A person highly motivated to belong presumably could adhere to group standards and contribute to group objectives even if he were relatively isolated in the system. It may be that in the absence of contact with others the person would be insufficiently informed with respect to group goals and approved means of attaining them; or that the characteristics and products of his behavior would be inadequately known or appreciated by other members. In either case his social worth would not attain a level commensurate with his attraction.

It is also possible that both interpretations are correct and that the correlations are produced by circular causal processes in the social system. The communication to members of signs that they are valued or devalued does act to increase or decrease their attraction to membership; and this in turn regulates the degree to which they behave in accordance with role expectations concerning compliance and contribution, which thus determines the position allocated to them in the prestige hierarchy.

Formal and Informal Status

The Midwest Social Agency was under the jurisdiction of a department of state government. Its staff occupied positions whose formal status and level of remuneration were determined by civil service regulations. Subjects of the study were distinguished, therefore, by differences in formal status as well as by the informal status described here as "social worth." An interpretation of the results that should be discussed, since formal status and social worth are positively correlated, is that the relationships found are attributable to the former variable. People who have higher status, more important positions, greater prerogatives including salary, report that they receive greater benefits by being members of the social system.

There are a number of reasons why this apparently straightforward explanation is less acceptable. The nonprofessional members of the staff occupied a formal status scale of seven levels which overlapped the professional five-level scale, yet none of the predicted relationships were found for nonprofessionals. The relationships were greater in the context of small work groups where informal status should be relatively more important than in the total organization; and they were also greater when seven subjects with extremely high formal status were removed from the sample. The fact that frequent interpersonal contact among members is necessary for attraction to be related to social worth is difficult to reconcile with the formal status interpretation. Finally, the relationships found when a person's social worth in his work group is compared with his

prestige outside his group point to the importance of the informal status system, since a person's formal status is the same everywhere throughout the organization.

Professionals and Nonprofessionals

The differences found between professionals and nonprofessionals were not predicted in advance; yet *ex post facto* they seem obviously to derive from the special character of the social system that was studied. In an organization whose primary goals and standards are professional the prestige system is organized around these goals and standards. As Parsons has pointed out (22, 196), the institutional patterns that govern the action of professionals lead to a different definition of the situation for them. Their motives are shaped to seek the particular type of gratifications available. In view of the relative strength of relationships found with the Attraction-Benefit and Attraction-People scales, one is tempted to say that professionals as a class tend to be achievement- rather than affiliation-oriented (11). Professionals participate in the prestige system; in effect they create the game with its rules and they play it. Whatever benefits nonprofessionals receive do not originate in the same prestige system. It is likely that they have their own informal status structure, unfortunately not observed in this research. It is also possible that the benefits obtained by nonprofessionals are not contingent upon compliance or contribution except insofar as the latter are conditions for remaining members of the social system.

The above discussion would appear to have implications for generalizing the findings of this or other studies of reference group processes. In any stratified or differentiated social system different degrees and kinds of gratification are available to particular categories of members. What may be appealing or satisfying to the needs of some may not activate the dominant motives of others. Thus, for reference group orientations to occur, a matching of motives to available gratifications seems to be a necessary condition.

Context of Reference Group Processes

The relative magnitude of relationships between attraction and social worth found in the two different contexts suggests that reference group processes are stronger within the small work group than in the organization at large. These findings are consistent with the Cooley-Mead traditional emphasis upon the significance of the face-to-face group for a person's motivation and behavior. It is in the small group that the person's interaction is concentrated and most intense. The expectations upon him

are clearer, his behavior more exposed, and his compliance and contribution more readily evaluated. The research provides evidence, however, that the same processes occur in the larger system, as long as there is an adequate amount of interaction among its members.

Functions of Interaction

The results of the research suggest a number of different functions served by interaction among members of a social system, both for the individual members and for the system itself. It may be assumed that the mediating process between social worth and attraction involves the communication of information about the group's approved purposes and procedures, and evaluations of members' activity. With sufficient contact among members of a system, continuous feed-back mechanisms are at play, distributing information about expectations and symbolic rewards or punishments in terms of the quality of members' compliance or contribution. Thus interaction functions to provide individual members with social reality concerning others' expectations and evaluations, reinforcing approved behavior and extinguishing disapproved, and attracting or repelling them from membership.

At the same time interaction functions to maintain the quality of the social system, since it serves to draw into more central membership positions those persons who are highly valued, and to make peripheral or repel from membership those who are judged to be making little contribution. With ideal interaction among members, which would imply perfect accuracy and optimal quantity, ultimately only members who made contributions to the system would remain within it.

This view of the function of interaction and reference group [4] processes in the social system implies that members are constantly in a state of flux, even though apparent stability meets the eye of the observer. Some are gravitating toward more central membership, others are moving away from the system. Logically it would also have to be assumed that some members are the recipients of just the precise amount of gratification, relative to that obtainable elsewhere, necessary to maintain their relationship to the social system in a state of equilibrium.

Summary

Although there is considerable evidence that the strength of a person's motive to belong to a group significantly affects his feelings and behavior, less is known about the sources of his attraction, the processes that medi-

[4] *Reference group* is used here in a generic sense. Elsewhere it has been proposed that the concept is too inclusive to describe the variety of person-group relationships to be found in a complex social system (14).

ate his orientation toward a single or competing groups, or the conditions under which these processes occur. This paper reports an investigation within a formal organization of these and related problems of reference group behavior.

The research began with some elementary assumptions about the nature of persons and groups: that individuals attempt to maximize personal gratification and minimize deprivation in their social interaction; that the prestige system of a group or organization generates evaluative symbols that are transmitted in face-to-face contact; and that a person's level of gratification is directly related to the character of the evaluative signs he receives in his interaction with others. The study was designed to test the following hypotheses derived from these generalizations.

1. *In any group or organization a person's attraction to membership is directly related to the magnitude of his social worth.*

2. *The magnitude of the positive relationship hypothesized in (1) varies directly with the volume of interaction the person has with other members of the group or organization under consideration.*

3. *Where alternative group orientations are possible for a person, his relative attraction to membership in one or another group is directly related to his relative social worth in the groups considered.*

4. *The magnitude of the positive relationship hypothesized in (3) varies directly with the volume of interaction the person has with other members of the groups under consideration.*

Data were obtained from the members of the staff of a child welfare agency selected because it met the demands of the theoretical problem. Three questionnaires were administered, one month apart, to elicit information about the work group structure, the frequency and type of interpersonal contact, the source and strength of attraction to membership, and the informal prestige system. Hypotheses were tested, using a correlational analysis, in the context of both work group and organizational membership.

The results support the hypotheses and the assumptions from which they were drawn, but point much more specifically than did the initial theorizing to the populations, conditions, and contexts in which these generalizations may be valid. The fact that hypotheses are supported by data from professional members of the staff but not from nonprofessionals, and more strongly so when achievement rather than affiliation motives are involved, implies that reference group orientations are significantly affected by the degree of matching of dominant motives to available gratifications. Reference group processes are also seen to occur with especial strength in small face-to-face groups where, to a relatively greater degree than in the organization as a whole, interaction is intense, expectations clear, behavior exposed, and compliance and contribution readily

evaluated. With sufficient interaction, however, similar processes occur throughout the larger system.

The research suggests that reference group processes are continually at work distributing gratifications and deprivations in social interaction and modifying individuals' desire to belong. A dynamic view of social structure emerges, with some persons moving in the direction of increased psychological membership, some in relative equilibrium, and others gradually drifting toward psychological nonmembership.

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7

Group Cohesiveness and the Expression of Hostility

Albert Pepitone and George Reichling

The field of interpersonal and intergroup hostility embraces several interlocked problem areas. There is, for example, the question of the conditions giving rise to hostility in the individual or group—the factors, in other words, that determine the hostile impulse. There is also the question—given the hostile impulse—of the conditions that govern the direction and quantity of its overt expression. A third question concerns the "fate" of the hostile impulse, particularly in relation to expression or lack of it. The phenomenon of "catharsis" illustrates this phase of the problem.

The present study is principally relevant to the problem of hostility expression. In particular, the experiment is concerned with the effect of group cohesiveness—as empirically defined in terms of the mutual attraction of members—upon the volume and direction of expressed hostility. The most pertinent data on this problem stem from an experiment by Wright (5). This investigator frustrated the play activity of paired children between three and six years of age, who had been previously classified by their nursery school teacher as being Strong or Weak friends. The observed behavior of these children under conditions of frustration showed that the pairs of Stiong friends expressed more aggression than the pairs of Weak friends, and that such aggression involved a greater incidence of physical attacks against the experimenter, e.g., kicking, biting.

If it is assumed that the two children in their play activity during the experiment constituted a group, and if pre-existing friendship affected *only* the cohesiveness of this group, we may propose a formulation that is suggested by the data and that seems well in line with everyday observation: Members of cohesive groups provide each other with strength and

From *Human Relations*, 1955, 8, 327–337. Reprinted by permission of the authors and *Human Relations*. The authors are indebted to W. Wallace and E. Galanter who participated in the experiment as the Assistant and Instigator, respectively.

support, which enables them to overcome internal and external restraints against retaliation in the event of attack. Highly cohesive groups, in other words, will be less restrained when under attack than relatively less cohesive groups. This greater ability of highly cohesive groups to reduce restraints will be reflected, we hypothesize, in a greater volume of expressed hostility and a more direct expression of hostility with respect to its source.

Method

Male volunteers were recruited from introductory psychology classes by an Assistant, who announced that a national organization was conducting an intensive survey of student attitudes toward various social and academic phases of campus life. The kinds of questions germane to the study were colorfully illustrated, and the fact that the participants were to participate as a group was carefully explained. As an added incentive, it was indicated that several universities were participating in the survey and that a published copy of the comparative results would be furnished to all volunteers. Prospective subjects then indicated their free hours on a prepared form, and, for purposes of creating the cohesiveness variable, checked a list of assorted personality traits in accordance with: (*a*) the type of person they thought they were, and (*b*) the type of person with whom they would most like to work. A few additional questions bearing on their interest in school activities were also included on the form.

Subjects recruited from *different* classes were paired and assigned at random to the High or Low Cohesiveness Conditions (*Hico* and *Loco* Groups). There were 13 groups in each condition. Upon being ushered into a conference room used for the experiment, the purposes of the survey were reviewed. Particular stress was placed upon the necessity for participation as a group. Then, in accordance with their designation as a Hico or Loco Group, the following treatments were given in a manner designated to maximize the effect of the formal content.

The Creation of Cohesiveness

Hico Treatment ". . . another factor in the selection of participants is that we try to get people who are basically compatible in their personalities, that is, who get along well together. We do this by matching people in terms of the traits *they* possess with the traits of people they like. You probably remember doing this on the application form. I must say that, in your case, we were able to make an exceptionally good matching, so you should make an exceptional team."

Loco Treatment ". . . another factor . . . (exactly the same as the

Hico treatment) . . . Unfortunately, we weren't able to make a good matching in your case, so I'm afraid you won't get along very well together."

The foregoing procedure is virtually identical with that successfully employed by Back for the purpose of inducing differential levels of group cohesiveness (1).

Following the cohesiveness treatment, the Assistant told the subjects that the "discussion leader" would arrive immediately.

The Creation of Hostility

On the basis of pilot studies, a technique was evolved that successfully aroused mild to strong hostility in these groups. In essence, the procedure was to treat the groups in an unjust, arbitrary, and insulting manner. The exact procedure followed was based wholly upon a well-rehearsed script, which was acted out in as natural and convincing a manner as possible.[1]

Instigator. (Enters after a deliberate, three-minute delay. To Assistant.) "Hello." (Looks annoyed.) "I see these groups finally got here. Do you have their application forms?"

Assistant. "Yes, here they are."

Instigator. (Looks through forms.) "This is terrible. How did these people get here?"

Assistant. "The campus doesn't have much to offer."

Instigator. "I can see that." (To one of the subjects.) "What's your name?" (To the other subject.) "And yours is?" (To one subject.) "How old are you?" (Sarcastically, before he answers.) "We don't want kids for this survey—we need mature adults." (To second subject.) "What's your age?" (Disgustedly, after person responds.) "That's just fine! Do either of you take part in any activities?" (Aside to Assistant.) "These people won't have any idea what's going on around campus." (To one participant.) "Do you ever go out with girls? How often?" (After response, cynically.) "Great!" (To other subject.) "And you?" (Moans as answer is given.) (To apparently poorer-dressed subject.) "Do you always come to appointments dressed like that?" (To Assistant.) "Well, let's see if we can use these groups anyway. I'll give them a sample question." (To one person.) "How do you feel about student-faculty relations on campus?" (Subject is cut off before completing the answer. To other subject.) "How about you?" (After response.) "Well, that's a profound observation!" (To Assistant.) "I can't waste the Association's time and money

[1] Frequent checks by an independent observer indicated that the script was, in fact, being followed exactly as written.

on drivel like this. I can't give them lab credit." (Volunteers had been promised an excuse from one lab paper.) "You might check with Professor Jason (fictitious) to find out if he can use them. He'll use almost anyone." (Exit.)

To eliminate external restraints from the situation, the Instigator severs his formal connection with the group and leaves. However, so as not to terminate the proceedings altogether, the possible use of the group by another person is suggested. Finally, to block any interpretation of official, repressive action toward the "bad" group, the Instigator is described by the Assistant as having relatively low status:

Assistant. "By the way, that was one of the graduate students in the department. These discussion groups are usually led by Professor Arnold Welch (fictitious), but he's attending a conference in New York today. I'll check with Professor Jason to find out if he can use you. I'll be back in about ten minutes."

There followed a "free" period of approximately six minutes, in which the groups were entirely alone. During this time, an observer in an adjacent room recorded various categories of motor and verbal behavior, which could be seen through a one-way-vision glass and heard through a sound-amplification system.

Observations

A schedule of observation categories was developed on the basis of pilot studies. Included were:

I. *Hostility*—all implicitly or explicitly negative statements directed toward: the Instigator, the treatment and procedures employed by the Instigator or the Assistant, psychology and psychologists, the physical setting. In addition, there was a subcategory of general suspicion, which included all negatively toned statements of doubt, mistrust, and inquiry, without reference to any particular target.

II. *Mutual Background*—all statements intended to enhance the subjects' knowledge about each other's "background," including interests, courses, and activities.

III. *Silence.*

IV. *Physical Gestures and Movements.* The observations were made in terms of the number of seconds in which a statement occupied *one* of the above categories. The one exception was in the case of Physical Movements; here, word-descriptions were recorded. The categories were treated as mutually exclusive, i.e., there was no multiple coding. The subjects were not distinguished as individuals, since our major interest was focused on the group as a unit. For purposes of temporal analysis of the

observed behavior, the schedule was divided into six sections of approximately one-minute duration.[2]

Questionnaire

At the end of the free period of observation, the Assistant reappeared. On an ambiguous pretext that additional information was needed by the "Association," a three-item questionnaire was administered. Each participant recorded his response on a six-point rating scale.

1. Frankly, how much interest do you have in the proposed discussion? (Point 1, absolutely not interested; Point 6, extremely interested.)
2. What is your feeling toward Professor Welch (the Instigator's name was substituted here) as a discussion leader? (Point 1, would dislike him thoroughly; Point 6, would like him pretty much.)
3. How do you feel towards your partner? How well would you get along in prolonged discussions and many meetings? (Point 1, would dislike him thoroughly; Point 6, would like him pretty much.)

Group Interview

Some thirty seconds after the questionnaires had been collected, the Instigator entered the room and announced to the subjects that they had been participating in an experiment and that it was all over. He then proceeded with a brief interview designed to uncover unexpressed feelings that participants had during the experiment as well as their present sentiments. Responses to the standard set of open-ended questions were recorded verbatim by the Observer.

At the conclusion of the interview, appropriate time was taken for a complete explanation of the purposes of the experiment. Before the subjects were dismissed, apologies were tendered and, happily, in all cases accepted.

Results

The mean number of seconds of group behavior in the three observation categories employed during the free period are presented in Table 1.

Table 1 shows that the only category significantly differentiating the Hico and Loco groups is that which reflects the amount of expressed

[2] Actually, adding the time it took the Assistant to walk from the "one-way" room to the conference room, the free period was for all groups somewhat over six minutes. In addition, the observer tended to overestimate the length of statements. Presumably, this error was constant for all groups.

hostility. The Hico groups, as predicted, release on the average more than twice as great a volume of hostility as the Loco groups. There is no significant difference between the experimental groups in the amount of mutual background behavior and in the time they were completely silent.

The three categories listed in Table 1, of course, did not exhaust the behavior that occurred during the free period. There were several other forms of verbal behavior not recorded. Also, throughout the free period there were physical movements and gestures of various sorts. These were described by the Observer as they appeared. For example, there were instances of laughter, changing seats, smiling, finger-drumming, throwing legs on table, sighing, looking under table, walking around the room.

TABLE 1

MEAN SECONDS OF OBSERVED BEHAVIOR IN THE HICO AND LOCO GROUPS

Behavior Category	Hico Groups $N = 13$	Loco Groups $N = 13$	SE_{diff}	t
Hostility	95.7	43.6	19.7	2.64 *
Mutual Background	145.6	179.0	37.7	0.89
Silence	75.7	105.5	29.0	1.03

* $p < .01$, one-tailed test

A comparison of the Hico and Loco groups with respect to the total frequency of these items reveals no difference. Further analysis, however, discloses a relevant finding. The Observer, the Assistant, and the Experimenter, with perfect agreement, sorted all the items into a dichotomy representing unrestrained and relatively restrained physical behavior.[3] For example, standing up, laughing, walking around the room were considered to be less inhibited behavior than smiling, drumming fingers, etc. The percentages of the total frequency of physical behavior thus characterized as relatively unrestrained are: 76 per cent for the Hico groups, and 47 per cent for the Loco groups. The difference, employing the standard error of p based upon the Hico and Loco groups combined, is significant at the .04 level of confidence, considering both tails of the normal probability distribution. The finding that highly cohesive groups are relatively less restrained in their physical behavior appears to be coordinate with the finding that these groups release more hostility than the less cohesive groups.

[3] The classifying procedure, of course, was accomplished independently of the consideration as to whether the Hico and Loco groups showed differential frequencies

The hostility released by the groups was usually directed toward particular targets within and outside the immediate experimental situation. Table 2 indicates the amount of hostility expressed toward these precategorized objects of hostility included on the observation schedule.

It can be seen that, on the average, the Hico groups express significantly more hostility than the Loco groups toward the Instigator and toward the treatment accorded them by the Instigator and the Assistant. The groups do not differ in the hostility directed toward psychology, psychologists, and various features of the physical situation. There is also no difference with respect to general, nondirected suspicion. This result con-

TABLE 2

MEAN SECONDS OF HOSTILITY EXPRESSED TOWARD SPECIFIED OBJECTS BY HICO AND LOCO GROUPS

OBJECTS OF HOSTILITY	HICO GROUPS $N = 13$	LOCO GROUPS $N = 13$	SE_{diff}	t
Instigator	55.7	11.5	11.6	3.81 *
Treatment	24.2	7.5	8.0	2.09 †
Psychology	3.8	8.8	4.4	1.14
Physical Setting	1.1	4.8	4.2	0.9
General Suspicion	10.9	10.6	7.0	0.04

* $p < .001$, one-tailed test.
† $p < .03$, one-tailed test

firms our second prediction regarding the directness with which hostility is expressed. Presumably, the Instigator, the treatment, or both constitute the sources of hostility. As such, expression of hostility toward these objects may be considered to be more directed than toward other objects.

Since these subcategories representing objects of hostility are exhaustive with respect to the amount of hostility released, a comparison of the Hico and Loco groups in terms of absolute mean values may not be an accurate reflection of true differences. The proportion of the total hostility released by the Hico and Loco groups that is directed toward the Instigator and the treatment may be compared. Eighty-three per cent of the hostility released by the Hico groups is in the direction of the Instigator or the treatment, while in the Loco groups 44 per cent takes the same direction. The difference between these percentages is significant at the .03 level of confidence, considering both tails of the probability distribution.

Throughout the course of the free period the amount of hostility released by the groups fluctuated from moment to moment. Figure 1 pic-

tures the amount of hostility expressed by the average Hico and Loco groups during each one-minute interval of the free period.

The curves representing both Hico and Loco groups are higher at the beginning than at the end of the free period. For the Hico groups, the reduction in the amount of expressed hostility is very steady over the whole time span. The mean of the difference from the first interval to the last is significant ($t = 4.10$, $p < .01$). The curve of the Loco groups begins with a slow decline, then drops sharply and significantly between the second and third minutes ($t = 3.08$, $p < .01$). Thereafter, the curve is essentially flat at about the level of five-seconds' hostility.

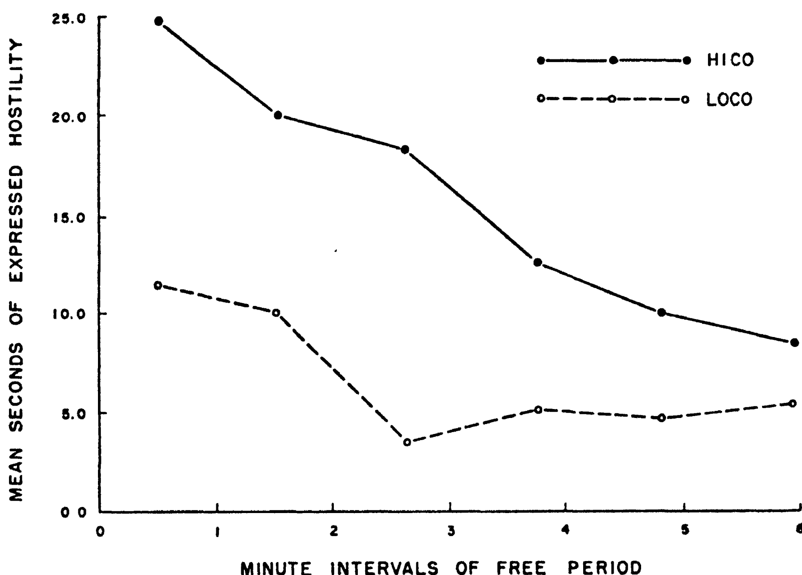


FIG. 1. Mean seconds of hostility expressed during each minute interval of the free period by the Hico and Loco groups.

There are several hypotheses that might reasonably account for these curves. One possibility may be briefly indicated. It should be borne in mind that the curves in Figure 1 represent a succession of averages and not necessarily theoretical functions.

The general diminution of expressed hostility is due to a reduction in the amount of hostility that is available for release. Hostility expressed during any interval leaves a lesser amount to be released during subsequent intervals of the free period. As for the Loco groups, it has already been shown that they are not able to release as much hostility as the Hico groups. When interpreted in a temporal sense this would imply that they

more quickly exhaust the amount of hostility they can release than the Hico groups.

Apart from whether this particular hypothesis is correct, there is no doubt that during the free period the Hico groups released a greater amount of hostility than the Loco groups. Making the reasonable assumption that the same amount of hostile impulse was generated in both groups, it might be expected that after the free period the Hico groups would display more favorable attitudes toward environmental objects than the Loco groups. Table 3 presents data relevant to this point.

TABLE 3

MEAN RATINGS (S'S POOLED) ON QUESTIONNAIRE ITEMS BY HICO AND LOCO GROUPS

QUESTION	HICO GROUPS $N = 13$	LOCO GROUPS $N = 13$	SE_{diff}	t
Interest	8.4	9.1	.57	1.23
Liking of Instigator	6.8	6.2	.25	2.40 *
Liking of Partner	11.7	10.2	.32	4.69 †

* $p < .02$, both tails
† $p < .001$, both tails

It can be seen that the Hico groups give a higher average questionnaire rating on Instigator attractiveness than the Loco groups. The difference between the groups in this respect is statistically significant. Although this finding appears to be understandable in terms of a greater catharsis of hostile impulses in the Hico groups, strictly speaking, we cannot demonstrate catharsis without proof that the Loco groups did not become less favorably disposed toward the Instigator owing to their relatively low amount of expressed hostility.[4]

Table 3 also shows a significantly greater degree of mutual attraction between the Hico pairs of subjects than between the Loco pairs. This result presumably confirms the different cohesiveness treatments given to the two experimental groups. To interpret this finding as due, not to the original cohesiveness treatment, but only to the differential amount of hostility released by the two groups would be difficult. In fact, there are data showing that groups in which hostility remains relatively unexpressed tend to show an *increase* in cohesiveness, while groups that express relatively more hostility show no net change in cohesiveness (3).

There are no differences between the Hico and Loco groups in the degree of interest they had toward the proposed discussion. Such a motiva-

[4] See (4) for a critical discussion of this problem.

tional factor, therefore, cannot be used to explain the differential attitude toward the Instigator or the difference in cohesiveness.

When the Instigator informed the groups that they had been in an experiment and that they could relax, the subjects issued a variety of responses, which were recorded by the Observer. There were shouts of surprise, moans, hostile oaths, as well as stretches, smiles, etc. Although the Hico groups tended to make more of these "cathartic" responses than the Loco groups, the difference was not statistically significant. Further analysis, however, did reveal an interesting finding. It had been observed that in some groups the foregoing responses were made by both participants, while in other groups, only one subject responded—often in the manner of a spokesman—or there was no observable response at all. When the experimental groups are compared, we find that the number of groups in which *both* persons respond occurs twice as often under the Hico condition as under the Loco condition. The difference is significant by chi-square test at about the .06 level of confidence. This result, although based upon relatively small frequencies, suggests that cohesiveness, in providing group members with more mutual support, enables a greater number of them to express their feelings.

Discussion

An increasing body of experimental evidence points to a close causal relationship between the cohesiveness of a group and the amount of mutual influence that is achieved among the members of that group (1, 2). In somewhat oversimplified terms, the theoretical basis for this relationship is essentially as follows: to the degree that, for whatever reason, members desire to remain in a given group, they will tend to originate and to accept pressures that are designed to preserve the group or to advance the group toward its goals. Thus, it may be said that the greater the cohesiveness of a group, the greater the power of that group to bring about change in its members. We propose a simple extension of this theory so that it may embrace phenomena other than influence pressures: The more cohesive the group, the greater the tendency for members to provide and accept support designed to overcome restraints that bar the removal of a threat to the group or that otherwise bar the locomotion of the group toward its goal. In other words, we may say that cohesiveness increases the group's "capacity" as well as its "power."

The foregoing general statement fits the results of the present experiment reasonably well. The members are attacked by the Instigator individually and collectively. They seek to remove this threat or at least retaliate against it. However, internal and perhaps external restraints tend to bar the expression of their hostility. The greater ability to reduce re-

straints assumed to characterize the Hico groups would account for the greater volume of hostility expressed, the greater directness with which hostility is expressed, and the apparently less restrained physical behavior.

Summary

1. The purpose of this experiment was to test the hypothesis that High cohesive groups are able to express more hostility than Low cohesive groups and that the hostility expressed by High cohesive groups will be more direct than that expressed by Low cohesive groups. Results tend to confirm these predictions at acceptable levels of confidence.

2. The Hico groups' physical behavior tended to be less restrained than that of the Loco groups.

3. There was some evidence supporting the psychoanalytic concept of catharsis. Having released a greater amount of hostility during a free period, the Hico groups rated the Instigator more favorably than the Loco groups.

4. In line with the proposed effect of cohesiveness in terms of the provision and acceptance of mutual support, the number of groups in which both subjects showed cathartic responses was significantly greater under the Hico than under the Loco condition.

5. A general theoretical statement was offered to integrate the findings.

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8

An Experimental Study of Cohesiveness and Productivity

Stanley Schachter, Norris Ellertson, Dorothy McBride, and Doris Gregory

The once modest concept of cohesiveness has in recent years become distinguished by the proliferation of meaning attached to it. With the growing interest in group psychology, cohesiveness as a concept has assumed some importance, for it represents an attempt to formalize or simply to verbalize the key group phenomena of membership continuity —the "cement" binding together group members and maintaining their relationships to one another. Discussions of this group property have been notably loose and *cohesiveness* has been defined variously as referring to morale, "sticking togetherness," productivity, power, task involvement, feelings of belongingness, shared understanding of roles, and good teamwork.

It is possible roughly to categorize these assorted meanings into two classes. One class of definitions centers chiefly around particular aspects of group behavior or process and the word *cohesiveness* refers to such things as the morale, efficiency, or "spirit" of the group. The attractiveness of the group for its members may be implicit in such formulations, but is usually of secondary importance. The second class of definitions is concerned exclusively with the attractiveness of the group for its members. Thus, Festinger, Schachter, and Back (3) define *cohesiveness* as the average resultant force acting on members with direction toward the group. No assumptions are made about the behavior or "atmosphere" of cohesive groups.

The distinction between these two formulations becomes clear in their treatments of the relationship of cohesiveness to group productivity. The cohesiveness-morale formulation suggests that since a cohesive group is

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marked by good morale and since the members of such a group like one another and get on well together, it should follow that the more cohesive the group the greater should be its productivity. At least two studies have tested this hypothesis. R. L. French (4) in a study of a military camp has attempted to relate a sociometric index of cohesiveness of the company to a variety of measures of performance in drill and athletic competition, academic work, participation in community activities, etc. Darley, Gross, and Martin (2) have investigated the relationship of sociometric indices of cohesiveness to judges' ratings of the excellence of group written essays. Neither study has supported the anticipated relationship.

The cohesiveness-attraction theory leads to a very different set of derivations (see Chapter 16). From this theory the derivation has been made (1, 3) that the greater the cohesiveness the greater the power of the group to influence its members. The power of the group will be equal to the magnitude of the force on the member to remain in the group. If the magnitude of change which the group attempts to induce is greater than the force on the member to stay in the group, the member will leave the group. The greater the force to remain in the group, the more successful will be the attempts of the group to influence the member.

If we conceive of group productivity as in part a function of the success of the group at influencing its members, it becomes clear that cohesivness should be one of the determinants of productivity. Whether cohesiveness will increase or decrease productivity, however, is determined largely by the direction of group induction. If the group attempts to influence its members to increase production, high cohesive groups should be more productive than low cohesive groups. If the group attempts to decrease production, low cohesive groups should be more productive than high. In both cases, the more cohesive groups are more successful at influencing their members. The present study was designed to test these implications of the cohesiveness-attraction theory for productivity.

The Experiment

There were four combinations of the variables, cohesiveness and direction of induction:

1. High cohesive, positive or speed-up induction (abbreviated Hi Co + Ind).
2. Low cohesive, positive induction (Lo Co + Ind).
3. High cohesive, negative or slow-down induction (Hi Co – Ind).
4. Low cohesive, negative induction (Lo Co – Ind).

Except for variations introduced in order to manipulate the two variables, the procedure described below was followed in all experimental conditions. Each experimental group was made up of three people. When

possible, the three people were all subjects. If because of scheduling difficulties it was possible to obtain only one or two subjects at a particular time, paid confederates posing as subjects were introduced to complete the group.

All subjects were female student volunteers from undergraduate education and psychology classes. The confederates, too, were female students. The subjects for any particular group were taken from different classes so that they would not know one another. There were 13 subjects in each of the high cohesive conditions, and 12 in each of the low cohesive conditions.

The members of each group were first introduced to one another. The experimenter explained that this was a study of group psychology, elaborated briefly, and then went on to a description of the specific task of the group—the cooperative production of cardboard checkerboards. There were supposedly three jobs to be done: cutting the cardboard, mounting and pasting it on heavier stock, and painting the boards through a stencil. One group member was to be assigned to each of the jobs. In explaining the task, the experimenter implied that speed and quantity of production were desirable.

After these preliminaries, each member of the group was assigned to a different workroom. Here, although all subjects were assigned the job of cutting, each girl was given the impression that the other two members were painting or pasting. The members of the group were allowed to communicate with one another only by notes delivered by a messenger. A subject was allowed to write as many notes as she pleased to either of the other two group members. Actually, all notes were intercepted by the messenger, who substituted notes from a standard prewritten set. The subject, however, believed the notes that she received were written by the other members of the group. These notes furnished the means by which direction of induction was manipulated.

Every four minutes the messenger delivered prewritten notes to the subject and collected both any notes the subject had written and the cardboard she had cut during the preceding four minutes. The subject cut cardboard for 32 minutes. Then, after filling out a questionnaire, she was brought together again with her group. The purpose of the experiment was discussed and the various deceptions were explained in detail.

The Manipulation of the Variables

1. *Cohesiveness* has been defined as the average resultant force acting on members to remain in the group. The valence of the group derives from at least two sources: the attractiveness of the activities mediated by

the group and the attractiveness of other group members. High and low cohesiveness were produced here by manipulating the attractiveness of the group members.

In the speeches recruiting subjects, the experiment was described as a study concerned with "people who really like one another." It was emphasized that on the basis of recent and striking research, it was now possible to select people who would be genuinely fond of one another. This research would determine the selection of work groups. Volunteers filled out questionnaires designed ostensibly to get detailed personality information. Examples of the questions asked are, "If your worst enemy were to describe you, what do you think he would say?" "Which people in history do you most admire?" "Would you have any objection to our looking over the test data available on you at the records office?"

In the experiment proper, as soon as a subject arrived and before she had met the other members of her group, she was privately interviewed by one of the experimenters. During this interview, apparently designed simply to collect routine information, the interviewer informed the subject in the high cohesive conditions that she was a member of an extremely congenial group and that "there is every reason to expect that the other members of the group will like you and you will like them." In the low cohesive conditions, subjects were told that due to scheduling difficulties it had been impossible to bring together a congenial group and that "there is no particular reason to think that you will like them or that they will care for you."

At the end of the experiment, the subject filled out a cohesiveness questionnaire designed to test the success of the manipulation. The following questions were asked:

A. How did you like your team?

B. If you were taking part in another experiment, how much would you like to work with these same girls?

C. How much do you think you would like to see your teammates?

Questions *A* and *B* were answered on 5-point rating scales designed to determine how much the subject liked her group and how much she would like to work with them again. Question *C* is a 7-point scale devised by Back (1) using an abbreviated Thurstone technique, to measure the "intensity of attraction."

Table 27.1 presents the data from this questionnaire. All scores represent the mean position of all subjects in each of the four conditions. The higher the score, the greater the cohesiveness. For question *C* the score was the highest point checked on the scale. With the direction of induction held constant, the scores on each question are higher for the high cohesive than for the low cohesive groups.

On questions *B* and *C*, all differences between high and low cohesive groups in either induction condition are significant by *t* test at the 1% level of confidence. On question *A* the difference between the Hi+ and Lo+ is significant at the 5% level and that between Hi− and Lo− at the 20% level of confidence. The manipulation seems to have been successful in producing high and low cohesiveness.

TABLE 27.1

RESPONSES TO COHESIVENESS QUESTIONNAIRE

	N	Question A: "Like Team"	Question B: "Work with Same Girls"	Question C: "Intensity of Attraction" Scale
Hi Co + Ind	13	3.62	3.77	3.77
Lo Co + Ind	12	2.92	2.92	2.50
Hi Co − Ind	13	3.85	4.31	3.69
Lo Co − Ind	12	3.50	3.25	2.75

2. *Direction of induction* refers here to attempts by the group to influence a member to increase or decrease her rate of production. All attempts to influence the subject were via prewritten notes which the subject believed were from other members of her group. During the first 16 minutes of the experiment, all subjects received five notes which made no attempt to influence their rate of production. In the remaining 16 minutes, the subject received six notes all attempting either to increase or to decrease her rate of production. In the positive induction conditions, these notes requested that she work more rapidly; in the negative induction conditions, the notes requested that she work more slowly. The specific notes and the time schedule governing their delivery follows:

Experimental time elapsed before delivery	*All subjects received these notes:*
4′	"I wonder who will use these boards." (signed) Paster. "I wish I had a coke right now." Painter.
8′	"Gee, but my fingers are getting sticky." Paster.
12′	"I wish I had a radio in here." Paster. "Don't you think this will make awfully loud checkerboards?" (smear of red paint). Painter.

	Positive Induction Subjects Received these Notes:	*Negative Induction Subjects Received these Notes:*
16′	"Can you hurry things up a bit?" Painter.	"Let's try to set a record—the slowest subjects they ever had." Painter.

20′	"The painter is hounding me for more boards—can you cut them them out a little faster?" Paster.	"You're getting way ahead of me—relax." Paster.
	"Hate to bother you, but I'm twiddling my thumbs. Couldn't you speed it up?" Painter.	"Please work a little slower. I'm flooded in cardboard and drowning in paint." Painter.
24′	"I've only got one board left, can you step on it?" Paster.	"Take it easy, I'm tired." Paster.
28′	"Time's running out, let's really make a spurt." Paster.	"Painting takes more time than you think—slow down." Painter.
	"The messenger says we only have a few minutes—see how fast we can can go." Painter.	"We've done a lot of these things. Let's take it easy now." Paster.

Results

The difference in the number of cardboards cut during the intervals of neutral and of induction notes is taken as an indication of the extent of acceptance of induction.

Table 27.2 presents data on the effect of induction on the subject's productivity.

TABLE 27.2

MEAN DEVIATION FROM LEVEL OF PRODUCTION IN THE 8′–16′ PRE-INDUCTION PERIOD

	N	16′–24′ Induction Period	24′–32′ Induction Period
Hi Co + Ind	13	+2.92	+5.92
Lo Co + Ind	12	+2.92	+5.09
Hi Co − Ind	13	−1.00	−2.16
Lo Co − Ind	12	− .58	− .42

For purposes of analysis, the experiment is divided into four 8-minute periods. The 8′–16′ period is taken as a base line. During these 8-minute periods the subject receives only neutral notes and no attempt is made to influence her rate of production.[1] The figures reported represent mean deviations from this base during the two later induction periods.

It is clear, first, that the direction of "group" induction, via the notes, had a major effect on the rate of production. In the positive induction conditions, production increases markedly. In the negative induction conditions, the rate of production decreases. During either of these two induction periods (16′–24′ and 24′–32′), differences between production

[1] During the first 8-minute period, the subject was growing accustomed to her job and the note writing procedure. In addition, she received only two notes during this time, whereas in each of the other 8-minute periods she received three notes. For these reasons, data for the first period are not comparable to the remaining periods and are not reported.

in positive and negative induction conditions are all significant by *t* test at the 1% level of confidence, at least.

The relations between cohesiveness and productivity are as follows: Communications calling for increased production result in no significant differences between the high and low cohesive groups. There are differences, however, when the notes urge a reduction in production. In this "slow-down" condition, subjects in high cohesive groups decrease continuously from induction period to induction period. Scores for both periods are significantly below the base line level of production at better than the 1% level of confidence. In the low cohesive groups, subjects decrease slightly in the 16′–24′ period and then increase their output. Neither of these scores is significantly below base line production. The difference between Hi Co– and Lo Co– subjects, in the 24′–32′ period, is significant by *t* test at better than the 2% level of confidence. In the 16′–24′ period, the difference is in the predicted direction but is not significant.

The effects of the cohesiveness variable stand out more clearly in Table 27.3.

TABLE 27.3

ACCEPTERS AND NON-ACCEPTERS OF GROUP INDUCTION

	Number of Accepters	Number of Non-Accepters
Hi Co + Ind	13	0
Lo Co + Ind	11	1
Hi Co – Ind	11	2
Lo Co – Ind	4	8

This table presents a breakdown, by condition, of subjects who accepted and who did not accept group induction. A *non-accepter* is defined as a subject who, during at least one of the last two periods, shifted her rate of production in a direction opposite to that of group induction. Thus, a negative induction subject who in at least one of these periods increased her rate of production over that of the immediately preceding period would be classed a non-accepter. Similarly, a positive induction subject who decreased her rate of production would be so classified. Again there are no differences between Hi Co+ and Lo Co+; almost all subjects in both conditions accepted induction. Differences between Hi Co– and Lo Co– are marked. Seventy-five per cent of all Lo Co– subjects are non-accepters and only 15% of Hi Co– are non-accepters. This difference is significant at the 1% level of confidence using Fisher's exact treatment of a 2 × 2 table.

Table 27.4 presents gross production data for the last three periods. The figures represent the mean of the total number of cardboards cut by the subjects in each condition. The differences between high and low cohesive groups are similar to those presented in Table 27.2. In the negative induction conditions, low cohesive subjects are less acceptant of induction and more productive than high cohesive subjects. Though, again, there are no significant differences in the positive induction conditions, the small differences that do exist are in favor of the low cohesive subjects. This may be attributable to the lower initial level of cutting of the high cohesive subjects. Despite the random assignment of subjects to the various experimental conditions, for some reason subjects in the Hi Co+ groups cut at a slower rate than subjects in any of the other conditions.

TABLE 27.4

MEAN NUMBER OF CARDBOARDS CUT IN EACH PERIOD

	N	8′–16′ Pre-Induction Period	16′–24′ Induction Period	24′–32′ Induction Period
Hi Co + Ind	13	5.31	8.23	11.23
Lo Co + Ind	12	6.16	9.08	11.25
Hi Co − Ind	13	6.31	5.31	4.15
Lo Co − Ind	12	6.42	5.84	6.00

In summary, the data indicate no necessary relationship between cohesiveness and high productivity. Group members will accept induction either to increase or decrease production. Whether or not highly cohesive groups are more likely to develop standards of high production rather than low production is a separate question, but evidence from industrial studies (2), e.g., the slow down, indicates that this is not the case.

Cohesiveness appears to be a determining variable in the negative but not in the positive induction condition. In the latter, both high and low cohesive subjects accept group induction and increase their output markedly. In the negative induction condition, the high cohesive subjects are more accepting of group induction and, consequently, less productive than low cohesive subjects.

Discussion

These experimental results indicate that it is necessary to study more carefully the relationships between the direction of induction and its acceptance. In an earlier study (3), induction has been formulated as the direction imposed on an own force. It is presumed that a relationship

exists between inducer and inducee such that the inducer either controls or represents a goal object for the inducee. The desirability of the goal object is a determinant of the magnitude of the force on the inducee toward the goal. The specific activities necessary to achieve the goal determine the direction of this force. At various times, a number of very diverse activities may lead to any one goal. In order, for example, that a farm boy be able to please his father, it may be necessary at one time to slop the hogs and at another time to mix chicken mash. Thus, the inducer can modify the direction of an inducee's own force by specifying the activities necessary to reach the goal. The inducer's success will depend on the direction and magnitude of other forces acting on the inducee. If the specified activity is negatively valent, or if other inducing agents are attempting to exert contrary influence, the inducer may be unsuccessful. Induction will be accepted up to the magnitude of the force toward the goal object. If other forces of greater magnitude and opposite direction are active, induction will be unsuccessful.

In the present experimental arrangement it is assumed that there are essentially two forces operating on the subject:

1. A force to be an accepted member of his particular group ($f_{p,\,gr}$).
2. A force to do a good job and win the praise of the experimenter ($f_{p,\,exp}$).

It is presumed that the magnitude of $f_{p,\,exp}$ is similar in all experimental variations and that the magnitude of $f_{p,\,gr}$ is greater in the high than in the low cohesive conditions. The direction of $f_{p,\,exp}$ is always the same, since the experimental instructions implied that speed and quantity of output were important. The direction of $f_{p,\,gr}$ is different in the positive and the negative induction situations. In the positive condition the group induces the subject to speed up and in the negative condition, to slow down.

It is apparent that the force constellations in the positive and the negative inductions situations are quite different. In the positive induction condition the two forces, $f_{p,\,gr}$ and $f_{p,\,exp}$, have precisely the same direction. In the negative induction condition they have opposite directions.[2] Our experimental results suggest that only when these two forces are opposite in direction does the magnitude of $f_{p,\,gr}$ determine the degree of acceptance of induction.

More generally, this relationship may be stated in this way: Induction is formalized as the direction imposed on an own force. The success of

[2] There are two bits of related evidence which support this analysis. Table 27.3 shows that 40% of all cases in the negative induction conditions did at some time reject group induction, whereas only 4% of subjects in the positive induction conditions did so. Further, in Table 27.2 it can be seen that positive induction subjects accelerated their rate of production at a far more rapid rate than did negative induction subjects decrease their production rate.

induction will depend upon the magnitude and direction of other forces operating in the field. If other forces are opposite in direction to the induced direction, the acceptance of induction will depend upon the magnitude of the own force toward the goal controlled by the inducing agent. If all other forces are similar in direction to the induced direction, the acceptance of induction will be relatively independent of the magnitude of this own force.[3]

The application of this conceptualization to predictions of a differential acceptance of induction in high and low cohesive groups demands further specification of the magnitude of forces opposite in direction to the group forces. If the opposing force has a magnitude greater than that of the force toward the high cohesive group, or less than that of the force toward the low cohesive group, there should be no differences between high and low cohesive groups. Between these limits, high cohesive groups should win greater acceptance of induction than low cohesive groups.[4] In the present experiment, then, it is presumed that in the positive induction condition any opposing forces that existed were of a lesser magnitude than the force toward the low cohesive group,[5] and that in the negative induction condition the magnitude of the opposing force was between the specified limits.

Though the term *group productivity,* as employed in this study, has a very limited and specific meaning (output per unit time), these elaborations of the cohesiveness-attraction theory do seem applicable to other formulations of productivity. *Group productivity* does commonly have a variety of other meanings: for example, the quality of a group product; or the speed and efficiency with which a group locomotes toward a given goal; or the degree of realization of group potential; etc. No matter what the criteria of productivity, or the structure of the particular task, high cohesive groups should (within the specified limits) be more successful at overcoming forces with direction opposite to group induced direction.

[3] It would be possible to further test this formulation of the induction process by reversing the experimental design used in this study. If the experimenter were somehow to induce forces on the subjects to work slowly, we should predict the opposite of the results reported in this paper. There should be differences between high and low cohesive groups in the positive induction condition and no differences in the negative induction condition.

[4] Essentially, this is a theory of the occurrence or nonoccurrence of a specific induced act. Implicit is the assumption that if the resultant force towards a particular activity is greater than zero, the person will perform that activity whether the resultant force has a high or low magnitude. Quite possibly employing criteria such as "eagerness to perform an activity," or "effort expended attempting to overcome a barrier," will necessitate further refinement of the present theory to include the effects of varying magnitudes of resultant force.

[5] It is conceivable that if the induction period had been extended in time, restraining forces would have grown to such magnitude that a difference between high and low cohesive groups would have appeared.

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Part Three

GROUP PRESSURES AND GROUP STANDARDS

9
Group Pressures and Group Standards: Introduction

In the book *Up Front,* Bill Mauldin states that combat outfits "have a sort of family complex." The men know what is expected of them and readily accept the group pressures to behave in a certain way while they are group members. He says (26, 58): "Combat people are an exclusive set, and if they want to be that way, it is their privilege. They certainly earn it. New men in outfits have to work their way in slowly, but they are eventually accepted. Sometimes they have to change their way of living. An introvert or a recluse is not going to last long in combat without friends, so he learns to come out of his shell. Once he has 'arrived' he is pretty proud of his clique, and he in turn is chilly toward outsiders."

As soon as a child is old enough to play with groups of other children he meets similar influences. A boy, for example, must not act too differently from his friends if he is to be accepted as a member of the gang. A girl, especially in adolescence, has to deal with the conflicts created for her as she tries to dress in the current "rage" of her school crowd in the face of objections from startled parents. Indeed, one of the difficult tasks in growing up, as described by Tryon (41), is that of correctly sensing the new behavior expected by one's peers at various ages.

Workers may agree on an acceptable speed of production, and exert pressures on those who differ from this rate so that they will return to the standard of the group. This group standard is often seen by management as an unwarranted restriction of output which they find it difficult to overcome. If the worker should sympathize with management's views in the matter, he is placed in a conflict of loyalties between his peers and his bosses. Among college students this same phenomenon occurs when the "eager beaver" is reminded that "a C is a gentleman's grade." In this fashion, average students indicate to the honor scholar that his behavior is too different from theirs to be acceptable, despite their professor's hopes in the matter.

An organization may bring a member to book who behaves contrary to its expectations and thereby endangers its reputation or achievement. William S. White (44) writes that Senator Watkins opened the hearings on Senator McCarthy with the assertion that the United States Senate was on trial. White continues: "It is only in this context of the un-

derlying reality, as the [Senate] appreciated it, that the whole of the proceedings can be truly understood. It was not a trial in the commonly understood meaning of the term at all; the judges clearly and inevitably had prior opinions, for day after day they had all sat with McCarthy. They were not hearing an action at law; they were determining simply the *degree* that a member had transgressed the rules, written or not, and the spirit of the club to which he belonged." After the judgment concerning McCarthy had been made, White says: "Again and again when McCarthy rose to speak there was in the chamber that rarest of all demonstrations, a demonstration of conscious disorder and inattention. Tolerance is a long rope here, a very long one. But, give a man enough rope. . . ."

For some groups it is recognized by all that they may legitimately exert pressures for uniformity of behavior and attitudes among their members. Thus churches, political parties, professional societies, character building agencies, and others are expected to influence the membership to behave in accordance with certain norms. Other more informal groups also exert an influence over their members, but often without anyone's consciously intending to do so and without the awareness of the members that it is happening. Neighbors, bridge clubs, fishing companions, and luncheon associates; those in short, who see each other often even though they have not created any formalized social structure, may also exert, through informal group standards, an important influence over each member's behavior.

The purpose of this chapter is to examine some of the current theories and findings concerning the way in which these pressures toward uniformity operate. Under what conditions do they occur? What functions do they serve? What is it that increases or decreases the strength of their influence?

The Social Scientist's View of These Events

For years the writing of anthropologists and sociologists have served to document the similarities of behavior and attitudes which occur among the members of one culture as compared to another. The Middletown books (25) and the Yankee City series (42) show how people living in one part of a city may think and act quite alike, and yet very differently from those on the other side of town.

How similarities of behavior such as these result from forces which the group puts upon its members has also been described. Roethlisberger and Dickson (31) dramatically recount the interactions and resulting conformity among workers in a factory. Cohen (6) asserts that delinquent

gangs, characterized by group standards in opposition to the norms of society, arise because society's expectations are not tolerable or cannot be met by potential gang members. Those sharing common feelings of rebellion thus provide support for one another. Studies of delinquent gangs clearly portray the operation of these group codes. Thrasher (40, 291), for example, says: "Opinion in the gang manifests its pressure in the variety of methods through which control is exerted, such as applause, preferment and hero-worshiping as well as ridicule, scorn, and ostracism. . . . the member who has broken the code may be subjected to a beating or in extreme cases may be marked for death." Others, such as Shaw (35), Whyte (45), and Zorbaugh (47), also note the vigor used in the enforcement of group standards in gangs.

There have been many studies showing the existence and importance of group standards. The classic study by Sherif (36), for example, demonstrated that, in a situation where the individual is unable to tell whether his answer is right or wrong, he is almost completely dependent upon the group for selecting a response. More recent work by Asch (Chap. 10) and Blake and associates (4) has arrived at a similar conclusion. And the field study by Newcomb (28) found similarities and changes in political belief on a college campus which resulted in pressures upon the students to conform to the standards of the campus community.

It seems clear, then, that similar behavior, attitudes, and opinions occur among the members of any enduring group. What may be the causes for these similarities? At least three explanations seem plausible: (*a*) Membership in a group determines for an individual many of the things he will see, think about, learn and do. The nature of the stimuli in the environment of a person is in large part affected by his group membership. A member of a labor union, for example, has different facts and interpretations placed before him than does the person who belongs to the Chamber of Commerce. Because of the relatively restricted range of events provided by a group for the members, they come to know, perceive, and do things in a somewhat similar fashion. (*b*) An individual may act like others in the group because he wants to be sure that he is correct in his understanding of events around him; when he is uncertain about such matters, he accepts the opinions of persons whom he likes or respects (*c*) A person may behave in a manner similar to the rest of his group because others press him to act or think as they do, on the grounds that there are advantages for the group from uniformity in behavior.

It is apparent, then, that at least some of the similarities of behavior among group members result from forces on the members for them to conform. How do these pressures arise?

Sources of Forces toward Uniformity

Although the origins of forces toward uniformity are not fully understood, two general kinds seem probable: (*a*) forces arising from conflicts within a person when he observes that his opinions or actions are different from those held by other persons, and (*b*) forces induced by other members who seek directly to influence the person's beliefs or behavior.

Intrapersonal conflict arises when a person forms a belief about certain objects or events which differ from the beliefs of others, provided that he assumes the others see these stimuli the same way he does. If he learns, to his surprise, that they see matters differently, he is faced with a contradiction. Should he trust his own senses or logic, or should he trust the views of the others? Speaking of the origin of such cognitive pressures to uniformity in group members, Asch says (1, 484) : "The individual comes to experience a world that he shares with others. He perceives that the surroundings include him, as well as others, and that he is in the same relation to the surroundings as the others. He notes that he, as well as others, is converging upon the same object and responding to its identical properties. Joint action and mutual understanding require the relation of intelligibility and structural simplicity. In these terms the 'pull' toward the group becomes understandable." In this instance no active process of interaction between the individual and the others is required. Other people may be physically present or psychologically prominent, but they need only indicate their judgments. Conflict may arise even if they do not react to his statements. Thus, under these circumstances the origin of forces to uniformity resides in the person, and it is significant that many individuals lose faith in their own views and accept what others have expressed, even though no active social pressures are exerted.

In keeping with Asch's account of the origin of pressures toward uniformity, we should expect no cognitive conflict to arise under conditions where the assumption of a single correct report is not made. Crutchfield (7) has described findings in such a situation. When subjects were asked to announce their *personal preferences* while others were present, rather than their judgments, there was virtually no evidence of any pressure toward uniformity.

The second source of forces on a person to think and act like others is the behavior of the others. Members of groups often exert such pressures on one another quite consciously. An illustration may be seen in a study of clerical workers among whom an informal understanding existed concerning the maximum work each girl should do if all were to continue to be employed by the company. A girl who worked faster than the approved rate was soon brought under pressure to slow down. As one

worker put it: "First we would talk about her unfairness among ourselves. If that did not reach her, we talked about her when she could overhear us. If she still did not change, one of us would approach her in the lounge and ask her if she was trying to kill our jobs. That usually did the trick."

Why do members of a group set up such pressures on one another? This question has not been adequately explored in research, but it is clear that pressures toward uniformity can serve at least three functions: (*a*) to help the group accomplish its goals, (*b*) to help the group maintain itself as a group, and (*c*) to help the members develop validity or "reality" for their opinions. Because the pressures are directed toward "approved" behavior, they are often described as group standards. It should be noted, however, that a group's standards concern only a limited set of behaviors or beliefs and not all actions or opinions by the members.

Group locomotion. Festinger (Chap. 16) has proposed that the pressures toward uniformity among members of a group may occur because uniformity is considered desirable or necessary in order for the group to achieve its goal. If a basketball team is to win games, for example, it is important that all players practice shooting baskets and keep up their skill. If an executive committee is to make workable plans, it is necessary that the committee's members believe in the same policies for the organization. If a library is to keep track of its books, it is mandatory that uniform methods be followed in loaning volumes and in returning them to the shelves. Approved procedures for movement toward an agreed upon goal, then, often are the sources of pressures toward uniformity. Members view these procedures as the proper way to behave since the methods are seen as assuring progress toward the goal. Any member who performs in a manner different from that approved by the group is a threat to that achievement and will be subject to influences from the others to return to the path originally designated by the group.

Group maintenance. Some group standards may simply serve as a means for helping the group to maintain itself. For example, the requirement that members regularly attend meetings or wholeheartedly support the party platform, are forces which serve to assure that the group will continue to exist as an entity. Similarly, pressures against behavior which may bring disgrace to the group, or divide the group and threaten its existence, or make members uncomfortable and ready to resign, also serve to ensure that the group survives.

The development of pressures toward uniformity during meetings of psychotherapy groups is described by Stock, Whitman, and Lieberman (37). They propose that a standard in such a group develops as a "solution" for potential interpersonal conflicts which might become disruptive in the group. Members may wish to discuss interpersonal relations

among themselves, for example, but may at the same time be wary of this topic because of the fear that some members may be hurt or that strained relations might develop. The conflict demands a solution which adequately satisfies the two conflicting motives and is also consistent with external reality. In this case, for example, the group might agree to hold impersonal discussions of relations "that often develop among persons like ourselves." Stock, *et al.*, suggest that members are then pressed to conform to this solution as long as it adequately deals with the conflicting motives and reality, but if reality changes (e.g., a shift in the nature of the group goal) the solution might also shift; or if the conflict changes its character the solution may again shift.

Social reality. Group pressures may arise in order to provide support for the opinions of one another by creating, through consensus, a social reality. Often there are no bases in logic, objective reality, or evidence of the senses, which enable a person to arrive at a judgment or opinion he feels is appropriate. With respect to a matter where no directly stable evidence is available, the subjective validity of an opinion comes to be established by the fact that other people hold similar opinions. Forces then arise among relevant persons to maintain uniformity of belief and thus to ensure a common conception of social reality.

A curriculum committee in a high school must decide upon minimum requirements for graduation. In order to make this decision, they need to answer questions like these: Should students have a general education or a more practical and vocationally useful one? Is education in the humanities more important than training in the sciences? What kind of a world will our graduates face? When a general agreement is reached on any of these questions, based upon preferred opinions, this shared agreement has a greater reality for each member than his previously private beliefs. Discussion groups, policy making committees, and conversation at the dinner table, are in large part concerned with establishing social reality for the participants.

A group can also provide members with a reality that helps them to understand themselves, when there are no other criteria available to help them do this. Persons who have a desire accurately to evaluate their abilities, for instance, can do so by comparing themselves with others. Festinger (9) assumes that such persons make more reliable self-evaluations when they compare themselves with persons close to them in ability than when they compare themselves with others who are greatly different. They are therefore attracted to groups containing persons similar to themselves, and pressures arise among the members to keep all participants similar in ability so that valid social comparisons can be made. As a result of these tendencies, members of groups tend to increase in similarity and in dependence on one another.

Schachter (34) has proposed that the creation of social reality is also likely whenever people confront an unfamiliar situation which arouses the emotions. Under such circumstances the person may not know whether his emotional disturbance should be viewed as fear, anger, chagrin, or excitement. "Just as there are pressures to establish the 'correctness' of an opinion and the 'goodness' of an ability, there are pressures to establish the 'appropriateness' of an emotion or bodily state. In the case of opinions and abilities, when there is no possibility of a physical check or a check against authoritative sources, pressures arise to establish a social reality. In the case of an emotion, when the precipitating situation is ambiguous or uninterpretable in terms of past experience, again pressures arise to establish a social reality. And since emotion-producing situations are often novel and outside the realm of our past experience, it could be expected that the emotions would be particularly vulnerable to social influence. It may be this presumed vulnerability that will eventually help us understand phenomena of emotional contagion such as panics and riots" (34, 128). This possibility is given support by the finding of French (12) that members in groups with a long history, in contrast to those in newly formed groups, tended to react uniformly, when smoke seeped unexpectedly under the locked door of the laboratory room, either with fear or with derision toward the experimenter for perpetrating a "hoax."

The three functions just mentioned for pressures toward uniformity (group locomotion, group maintenance, and social reality) may exist separately or together. It is conceivable that in some instances these serve to counteract and in other situations to reenforce one another. One way of maintaining a group is to make sure that social reality is similar for all members so that the group is not split by factions and disagreements. Another way is to define certain rules concerning the relations of members and the loyalty members should display toward the goals, ideals, or values of the group. The inductions from these standards on the members, then, assure uniformity of the members in order that the group may continue to survive and achieve its goals.

A Microscopic View of Group Standards

For many purposes it is most convenient to treat a group standard as a unitary property of a group. From this point of view the salient questions to be asked concern the functions of the group which its standards serve and the consequences for members and for the group of conformity and deviation. It is also valuable, however, to examine the processes of social influence in greater detail. Several more microscopic treatments of group standards and norms have been proposed.

Rommetveit (32), for example, has made a useful distinction between "sent norms" and "received norms." He defines a sent norm as the stable expectation by the norm-sender that the norm-receiver will behave in a certain way and by the readiness of the norm-sender to reward conformity and punish deviation. He defines a received norm as the perception on the part of the norm-receiver that the norm-sender expects certain behavior and is ready to reward conformity and to punish deviation. By making this distinction, Rommetveit is able to analyse separately the factors which influence the behavior of people who exert social pressures and that of those who are subjected to them.

A somewhat similar analysis has been proposed by Jackson (19). Of particular value in this analysis is the concept of "return potential." Each member of a group is conceived as having a readiness to approve or to disapprove in varying degree the different behaviors which specific others may perform. Thus for each behavior that a member might display there is a certain amount of approval or disapproval that he would receive from others. This property of each possible behavior constitutes its return potential for him. The distribution of return potential along various dimensions of possible behavior, whether for example there is a narrow or broad band of approved behavior, specifies an important property of group standards.

A rather different approach to the microscopic analysis of group standards is suggested by the work of French and Raven (Chap. 32). To the extent that group standards are established and maintained by social influences exerted by certain group members on others, they should be expected to depend upon the social power relations among members. French and Raven have distinguished five bases of social power: (*a*) reward power, based on a member's perception that others have the ability to mediate rewards for him; (*b*) coercive power, based on the member's perception that others have the ability to mediate punishments for him; (*c*) legitimate power, based on the perception by the members that others have a legitimate right to prescribe behavior for him; (*d*) referent power, based on the member's identification with others; and (*e*) expert power, based on the perception that the other has some special knowledge or expertness. The strength of one member's power over another is defined as the maximum ability of the one to set up forces on the other. This maximum is determined by how much force he can use and by how much resistance his influence attempts arouse in the other. The actual influence exerted will also depend upon how much opposition the recipient develops toward these forces because of his own needs or his allegiance to other groups. One may expect the nature of group standards, their strength, and the consequences of deviation to be affected by the prevailing bases of social power within the group.

By looking closely at the expectations and abilities to exert influence possessed by norm-senders, these microscopic analyses provide a basis for a better understanding of the origins of group standards and the determinants of their effectiveness in controlling beliefs and behavior. By treating separately the norm-receiver, they call attention to the things which facilitate or inhibit the acceptance of such social pressures. A comprehensive understanding of group standards and norms requires viewing them at the group level, the individual level, and the interpersonal level.

Strength and Effectiveness of Forces toward Uniformity

Where forces toward uniformity arise within the individual because he faces contradictory evidence from his own perceptions and from the reports of others, he must weigh the evidence from the two sources. If the others have expert power for some reason, he will be more likely to accept their beliefs when they conflict with his own. Research by Asch (Chap. 10) and others suggests that the tendency of a person to accept others' opinions is stronger where the following conditions are present than where they are absent: (*a*) the quality of the evidence presented by others is convincing because of the unanimity of belief among them or because of his evaluation of the trustworthiness of their judgments; (*b*) the quality of the evidence being judged is unclear or involves ambiguous distinctions; (*c*) the discrepancy between his own opinion and opinions of others is large (but not too large); (*d*) the confidence he has in the correctness of his own perception is low; and (*e*) he knows that others are aware that his opinions differ from theirs. There is, moreover, considerable evidence that people with certain personality characteristics more readily accept opinions of others, instead of their own (7).

Psychodiagnosticians often consider nonconformity to be a symptom of potential mental illness, but in one investigation (23) it was observed that neurotic patients in a mental hospital were less inclined to conform to the group's belief than were a matched group of normal persons. The authors of this study proposed that neurotics are not highly sensitive to, nor interested in, what others think, because of their absorption in their personal problems.

One pair of personality attributes, described by McDavid (27), is of special interest in considering conformity as a resolution for internal cognitive conflicts. By the use of an especially constructed test, he identified persons with either of two characteristics: (*a*) those who are consistently concerned with the *source* of a statement; that is, concerned with who sent the message rather than its content; and (*b*) those who are more concerned with the *content* of a message and its use, rather than who sent

it. In an experiment where the subject found himself deviating from the group, he observed that persons with source-oriented personalities conformed to others' opinions more than those with content-oriented personalities. In general, those who are concerned about their relations with others may be expected more often to resolve their conflicts by conforming to others' than by sticking to their own beliefs.

Belonging to a group makes a person sensitive to his relations with others. Thus, if a person with a cognitive conflict is a member of a group, and the judgments being made are somehow relevant to that group's fate, we would expect a greater tendency for him to alter his judgments to match the group's opinions than if he were among a collection of strangers. In Chapter 11, Deutsch and Gerard demonstrate that group membership does indeed generate greater conformity than does nonmembership.

In studies like those of Asch, McDavid, and Deutsch and Gerard, the person can hear what others say, or see what others do, but they offer no direct influences upon him, or reactions to his deviant comments. What happens when the others exert pressures on the person, because, for example, they have become aware of his deviant behavior? On the basis of research by Thibaut and Strickland (39) it appears that these pressures are highly effective in changing his behavior if he is concerned with maintaining membership in the group that is exerting influences on him. But, the pressures are quite ineffective if he is primarily concerned with cognitive clarity, rather than maintaining group membership, apparently because the contradictory pressures in this latter case are received as disconfirmation of his own judgments but not as evidence that he should accept the views of others.

Membership in a group, then, influences one's tendency to model his attitudes and actions after those of other members. It is useful to inquire what conditions in a group affect the strength of forces the members place on one another toward uniformity of behavior or belief.

Salience of group. In a variety of ways a group may become salient for a person, and the greater its salience the stronger and more effective its pressures toward uniformity are likely to be.

A member of a group often receives cues which remind him that he is "one of us," that he is a Methodist, an Elk, a Rotarian, a member of his profession, or the like. These cues, because they make his membership prominent and present for him, heighten the salience of his group. The cues, furthermore, are reminders that his group has standards and that he is expected to abide by them. At one time, of course, a person's belonging to one group may be dominant while at another time a different group may be more important. At any given time, however, the dominant group largely determines his feelings and actions. Kelley (20) observed,

for example, that when the group-anchored attitudes of Catholics were exposed to counterpressures, the resistance to change in the attitudes was greater the more that participants had had their belonging to the Catholic church made salient before being exposed to the counterpressures. These results, it is interesting to note, were stronger for high school students than for college students.

Achievement of group. Where group pressures are generated because uniformity of behavior is necessary for group locomotion, the strength of the pressures toward uniformity are greater the more that members see that similar actions will help the group accomplish its purposes (see Chap. 16). The strength of the pressures toward uniformity are also greater, the more the group values its goals and the more it sees these goals as attainable. Concerning the attainability of goals, Raven and Rietsema report in Chapter 21 that pressures toward uniformity are stronger the clearer the goal and the path to it are to the members.

Cohesiveness of group. The power of a group over its members is directly proportional to the cohesiveness of that group. The relationship between cohesiveness and power holds regardless of whether attraction is based on personal attraction between members, on effective performance of the task, or on the prestige obtained from membership (2).

A cohesive group is one that provides satisfaction for the members, or a high probability of doing so. Because it represents a source of satisfaction, the group takes on value for the members; their own needs are best served by serving the welfare of the group. Pressures toward uniformity are stronger in a more cohesive group because of the value attached to the group; and members accept these pressures because the standards are important for the group, and in order to maintain their acceptability to the group.

It is readily understandable, then, that persons who are fearful that they might be rejected, because of deviant opinions, are more likely to conform than those who are confident of their acceptancy by the group. Persons who feel accepted in an organization, apparently feel freer to think for themselves and to deviate from the group's standards than do persons who are not certain they are wanted (18, 30).

Many groups create specialized positions, each with its own set of responsibilities and procedures, and members assigned to these roles are expected to act in the manner prescribed for each role (e.g., nurses' aide, nurse, interne, resident doctor). The role prescriptions are pressures toward uniformity among those occupying a certain position in the group. The strength of these pressures varies with conditions in the group. The greater the cohesiveness in a group, for example, the stronger should be the pressures on the role occupant to act as he is expected to do. This last proposition was examined by Hall (15) in a study of the cohesiveness

of bomber crews. He found that greater cohesiveness was associated with stronger agreement among crew members as to how the aircraft commander should act toward them and with greater adaptation of the commander's behavior to the pressures from his crew.

Certainty of sanctions. We have noted that pressures toward uniformity may appear in an established group as a means of ensuring the accomplishment of some end. Since the objective usually has value to a group, it is common for group members to apply some punishment or loss of reward to those who violate the rules, in the form of fines, ridicule, shunning, or even exclusion from the group. Members who know that such sanctions are likely may be expected to conform to their group's demands —or to act as if they were doing so.

In a study of 700 members of committees concerned with "educating" the public to appreciate the products of an industry operating throughout the nation (38), the observation was made that members more actively followed the practices approved by their groups if sanctions were exerted upon them than if they were not. Thus, members behaved as expected by their colleagues because they knew that unpleasant reactions were likely to follow if they did not do so. In Chapter 32, French and Raven make it clear, however, that the power of a group, based on coercion, is more effective if members perceive such threats as legitimate, that is, in accord with the values of the members, than if they view them as nonlegitimate.

The likelihood of sanctions will be stronger if others know that a member is a deviant than if he is successful in concealing his nonconformity. It follows that public behavior is more likely to be conforming than private behavior and that overt acts are more likely to conform to the group's expectations than covert beliefs.

Some groups increase the effectiveness of their pressures toward uniformity by rewarding conformers. Examples are the honor rolls in school, bonus payments for high production in industry, and awards for good citizenship in the community. An awareness among members that rewards will certainly follow approved behavior reduces their resistance to these pressures.

Degree of self-confidence. A young man is advised that he must have firm convictions if he is to resist the temptations of those who would lead him astray. Experimental evidence, not surprisingly, supports this counsel in that persons with weak opinions are found to be more vulnerable to contrary group pressures than members with strong beliefs, and members who have not been urged to stand on their own principles accept others' influences more readily than those who have been urged to be true to themselves alone (see Chap. 11). Thibaut and Strickland (39) report that as pressures become greater, and as persons yield in their own

beliefs, their confidence in their own views decreases, and their resistance against group pressures is further reduced. Hochbaum (16) weakened the confidence of laboratory subjects (by telling them they had done poorly on a test) and increased the confidence of others (by telling them they had done well on the test). Those who had had their confidence reduced, yielded more quickly to subsequent group pressures on related matters than those whose faith in themselves had been raised.

From practical experience we know, however, that members are not always vulnerable to group pressures even when their confidence in a belief has been shaken. They may find ways of protecting themselves from these pressures. Brodbeck (5) has observed that persons whose confidence in a belief has been reduced by exposure to counterpressures prefer to hear arguments from their own side, rather than from the other side, in order to bolster their confidence. And as a result of listening preferentially to persons who agree with them, and ignoring arguments of their opponents, their confidence in their opinions returns to its former level.

Consequences of Pressures toward Uniformity

Individuals who are faced with cognitive contradictions become uneasy and anxious—as conflicted persons might be expected to behave. Conformity apparently serves as a way to reduce this anxiety for many persons (17).

Even when an individual conforms he is nevertheless likely to retain some reservations about his decisions, since the chosen alternative is seldom entirely positive and the unchosen one seldom entirely negative. These reservations are manifestations of a state of cognitive dissonance. The conformer's awareness of any negative aspect of the chosen alternative is dissonant with his cognition that he has chosen it. Similarly, his awareness of any positive aspects of his former belief are dissonant with his cognition that he has rejected the belief. Thus, the greater the attractiveness of the belief he gave up in order to conform, the greater is the dissonance following his decision. In Chapter 12, Festinger and Aronson show that efforts will be made to reduce a dissonant state. One way of doing so is for the person to convince himself that the belief of others is even more attractive (relative to his own) than he had previously thought. It follows from this view, that persons who conform may seek to convince themselves that there is high value in their changed belief, which then adds to the stability of the new opinion. Those who do not alter their beliefs, in order to reduce their tension, may resolve their conflicts by degrading, denying, or distorting the opinions others hold, by denouncing the wisdom of those who believe differently from themselves, or by deciding that the difference in opinion is small or unimportant.

As we have already noted, when persons are deviant members of a group, other members exert pressures upon them, urging them to mend their ways. In observing the processes of a group meeting, then, we find a quickening of interest when a deviant remark is made, a concentration of communication toward the deviant, and sometimes an unreasonableness in reacting to the content of the deviant's remarks.

What happens in a group when a deviant does not conform? Several alternatives are open to the members. If he is a useful and valued member, or one whose judgment is more respected than their own, they may reinterpret his behavior so that it is no longer seen as threatening to them. Thus, a prestigeful deviant may be excused by asserting that he did not mean to act as he did, that his behavior was misunderstood, that he could not help his actions, and the like. Or, the group standard may be changed so that his previously nonconforming acts are now approved rather than disapproved (37).

If the pressures for uniformity are too strong to allow ready changes, and an ordinary member persists in his deviancy despite pressures upon him to shift, a group has a potent means at its disposal: it may redefine the boundaries of the group so that the deviant is excluded, thus protecting uniformity among the members. In Chapter 15 Schachter describes the results of a laboratory experiment where college students were given an opportunity to accept or reject their present companions in anticipation of further meetings. Three paid participants took different positions with respect to the opinions that developed in group discussions. One began as a deviant from the group's view but changed his position to conform with that of the group (the slider), one remained a nonconformist throughout the experimental meeting (the deviant), and the third adopted attitudes which closely resembled the mode of the group (the conformer). The results in general showed that neither the conformer nor the slider was rejected. The deviant on the other hand was strongly rejected. The tendency for groups to reject deviant members was thus confirmed. Several conditions in the groups made these results more likely to occur: (*a*) the higher the cohesiveness, the greater was the inclination to reject the deviant, and (*b*) the more the deviation was relevant to the purposes of the group, the greater was the rejection of the deviant. This experiment has been repeated on different populations of subjects. Emerson (8) used high-school students and found somewhat less tendency for these younger people to reject deviants than Schachter had found among college students. He suggests that high-school youths were not as sure of themselves on the issues discussed and often changed their minds to suit the arguments of the deviants. Replications of this study, in seven European nations, were also found to be in accord with Schachter's earlier theory and results (33). Apparently the tendency to

reject deviants is not a phenomenon limited to the United States alone.

Group pressures may have both good and bad effects with respect to the security of members. The standards reveal what members want or can expect from one another and create thereby an orderliness in interaction that is clearly necessary for security. Moreover, a member who is able to live up to the group's standards wins the approval of his mates and feels successful. Social pressures, however, may make great demands on a person's courage if he is to stand by his own principles (21). Worse, if he cannot achieve as well as others expect of him, he may have feelings of failure, reducible only by getting the group to lower its demands (which is difficult for a failure to do), or by his departing from the group. Gross, Mason, and McEachern (14) have shown, in a careful analysis of the school superintendent's role, that the mental health and efficiency of a superintendent is directly related to the degree that he and his school board have similar values about education.

The established orderliness stemming from pressures toward uniformity helps the group in its work. The standards reduce confusion and wasted effort, but at the same time they often cause uneasiness, inflexibility, and a reduction of creativeness among members. Pressures toward uniformity, then, can be both beneficial and harmful to members. Our understanding of these effects will best be furthered by seeking to learn what conditions make pressures helpful and what conditions make them harmful. A concentration on either side of this issue is likely to generate a distorted view of the facts.

Voluntary and Involuntary Membership

Most of the discussion up to this point has concerned the nature and effectiveness of pressures toward uniformity where a person is a voluntary member of a group. But individuals are often in groups which they are not able to leave. How do the pressures for conformity differ in these two situations?

Let us suppose that a student is allowed in one class to join a work group of his own choice. In another class he is assigned to a group by the teacher and is told that transferring from one group to another is not permissible. The major differences in these two groups is that in the former case the student chooses a given group or project on the basis of its attractiveness for him, and he may leave it if he wishes. In the latter case, the group to which he is assigned may or may not be attractive to him, but regardless of his feelings he may not leave the group.

When a person volunteers to join a group, the power of that group over the member is a function of the attractiveness of the group for him. In a group with restraining forces against departure, however, the individ-

ual is "held" in the group and as much coercion or threat of punishment can be exerted upon him as is necessary in order to get compliance from him. Thus the power of the group over the member in military organizations, public schools, prisons, and other institutions which are able to develop strong restraining forces, perhaps stems more from the strength of these restraining forces than from the attractiveness of the group.

In most situations, of course, there are various blends of the two extremes of wholly voluntary and wholly restrained membership. Although it is highly unlikely that pure cases of the two can often be found, it is worthwhile to examine further how these two types of situations can differ.

It may be proposed that the group whose members are not able to leave will develop more overt or noninternalized conformity than the group whose members remain because they are attracted to it. In the restrained situation, the individual may develop feelings of resistance or behavior and beliefs intended to protect him from the consequences of pressures put upon him. But in the end he will probably comply—at least insofar as others can tell. In the attractive group, however, there is always the possibility of leaving the group if he does not like the nature of the social influence being exerted upon him. Thus, any decisions to conform with the group are made on the basis of his own motives and not simply to satisfy others who have power over him. It follows, that the more the group is attractive to a person, the less he resists its demands and the more he is likely to conform. It should be expected that the group with restraining forces will obtain overt conformity or compliant behavior, but that only the attractive group will develop lasting changes of attitude and motivation.

It has been observed that pressures which originally stem from a group one cannot leave can be transformed into forces which the member later accepts. The demands upon the draftee, for example, which may originally be perceived as impositions may eventually become strong group standards within his own group. Raven (30) has reported experimental results which suggest that a person who privately records an opinion he does not entirely believe, because he anticipates that others in the group who are known to disagree with him will subsequently see his notes, is likely to change his belief so that he now has faith in what he found himself recording. Evidence presented in Chapter 11 indicates that persons who are forced to behave publicly in a manner contrary to their beliefs are likely to retain their former opinions, whereas those who agree to act overtly in a way that contradicts their beliefs change those beliefs in order to bring them in line with their overt behavior.

The Red Chinese, during the Korean war, tried to interest American prisoners in communism by requiring them to make speeches, write es-

says, and otherwise describe the virtues of communist ideology. While so doing, the Chinese systematically worked to destroy the American's confidence in his fellows and in their support of him, so that group pressures opposing communism could be weakened. The small amount of success the Chinese had is well known; perhaps it occurred because the prisoners remained faithful to their friends, but also because they could not accept the inducers and their methods. Here social support served to help prisoners maintain their group-anchored beliefs.

There is evidence that the arousal of social support is greater when members are strongly threatened from sources external to the group. In a study of a religious sect (**10**), believing in the momentary destruction of the earth and the impending arrival of men from space who would save deserving persons like themselves, it was observed that vigorous efforts to engender social support for their shared beliefs arose after the space men failed to keep their appointment and the earth was not destroyed. In this instance the believers decided that the earth was not demolished precisely because of their belief and faith, thus mutual support allowed them to maintain their membership and their hopes.

How Group Pressures Change

Once group pressures are so set as to create group standards, the uniform behavior is difficult to change. The resistance to change in health habits, farming practices, production methods, and many other ways of life provide full testimony for this fact. Yet, there is evidence that they do change and can be changed.

Coch and French (Chap. 18), for example, describe how a group of workers lowered their production rate, and exerted strong pressures for conformity to this reduced speed, following a change to a new work method which was no more difficult than the former one. Other groups of workers changed their group standards also, but in this case the change was in the opposite direction. They demanded greater speed of production. The major variable determining the amount of production in the two groups was the amount of opportunity they had to participate in making decisions about how the work transfer should be carried out. Those workers who participated in group discussion about the transfer raised their production rate after the transfer, whereas those who were simply notified about it lowered their production rate. The standards of these groups apparently changed in response to changes in the relation of the group to its environment.

Although group standards can be changed, the more striking characteristic about them is their enduring quality and the fact that they may be the sources of resistance to change in organizational structure or practices.

This has led to a number of experimental demonstrations in which it has been shown that if an entire group makes a decision about some change in behavior which the members will make, this agreed upon behavior will occur even when the members are away from the group. Group decisions have been shown to be more effective than other methods in stimulating changes of behavior such as: feeding babies orange juice; increasing production of pajamas; improving reliability of merit ratings; examining breasts for cancer; serving brains, liver and kidneys; or eating whole wheat bread. Lewin (24) has described the results from a number of such demonstrations, showing that change is more likely to occur when a group takes "the pledge" as a group, than when individuals make promises to themselves alone.

It appears, then, that group decisions are more effective in changing behavior than lectures or group discussion without any decision, but it is not entirely clear what it is that makes them work. It has been assumed by some that public commitment to carry through the behavior decided upon by the group creates an awareness of the expectations that the members had for each other, thus creating forces on each member to comply with these widely felt sentiments. These pressures for uniformity thus serve to develop a group standard. In line with Festinger's theory briefly described in Chapter 16, one would assume that more cohesive groups would develop stronger group standards as a result of a group decision. This notion, however, has never been adequately tested. Other conditions, described earlier, serving to strengthen pressures toward uniformity would also heighten the impact of the group decisions.

A study by Bennett (3) casts doubt on the importance of public commitment in group decisions. She used small groups which met for a brief period. Comparing the results of several influence methods, she finds that the group discussion and the public commitment aspects of group decisions do not significantly increase the probability that the behavior agreed upon by the group will be carried out. The more important features are the fact that a decision has been made and the degree to which group consensus is obtained. These two variables account for most of the change brought about by group decision. The finding concerning the importance of group consensus supports the notion that group pressures toward uniformity may be stronger when there is unanimity on a proposal.

Pressures toward Heterogeneity

Thus far we have discussed group standards as though social pressures are always toward uniform behavior in every member and as though each individual were a member of one and only one group. In reality, groups may require special standards for special people, and persons may belong to groups with different standards.

Groups often develop a standard which requires different people to do different things. Thus, the pressures put on a new member, or a less skilled member, may be different from those directed toward a veteran or a highly skilled person. In many groups the work they do requires that different members take different parts. Also, groups may sometimes agree that they will not allow pressures for uniformity to develop in certain areas of the group's life; for example, so that creativeness be encouraged or that freedom of thought be respected. The importance placed upon academic freedom in professors' teaching and research is a familiar example of an agreement to allow disagreement.

Persons belong to different groups, often with quite contradictory norms. The business man may listen on Sunday to a sermon concerning the way to deal with his fellow men and heartily endorse these views. On Monday he may attend a session of the Society for Sharp Business Practices and embrace the opposed opinions of this group just as readily. Although membership in different groups may create dilemmas and contradictions for the individual, it is also commonly observed that the majority of people function efficiently as members of many groups. Often they may be only vaguely aware of the inconsistencies of their beliefs; acting in accord with the standards of the group that is most salient at the moment, or managing to resolve the conflicts without being aware of them at all.

Some roles place their occupants unavoidably in a position of overlapping membership. The modern industrial foreman, as an example, is formally a member of management but informally a member of the work group on the shop floor. Where the standards of these two groups differ, which shall he follow? The school superintendent, as a further illustration, is a member of the school board and a member of the school faculty. Gross, Mason, and McEachern (14) reveal that the conflicts arising for a superintendent because of his middleman position, are often resolved by his adherence to the standards of a third group, his professional association of peers.

In a study of foreign visitors, Watson and Lippitt (43) observed that the stranger finds many people reacting to him only as a representative of his home country, and that the new environment challenges the assumptions of the old. The visitor must try to meet this challenge as a necessary condition for interaction with the hosts, and for his own peace of mind. He feels the need to conform to his present group but also loyalty to the groups "back home." Zajonc (46) reports that strangers who are frustrated by the difficulty in thus conforming turn to aggression against the new behavior or beliefs they have tried to adopt. Their aggression is facilitated by the social position of the stranger, and diminishes their original need to conform while increasing their desire to behave as people do "back home."

Killian (22) has vividly described how overlapping loyalties and "cross pressures" can become a keen conflict for an individual, when he is forced to choose among them in some emergency such as a community disaster. In such a situation, he found that previously nonconflicting memberships suddenly presented the person with the necessity of making a choice which was difficult for him; between, for example, caring for his family and seeking to help his fellow workers. Each person tended to offer help to the group that was most important or attractive to him. The effects of overlapping membership were examined in a laboratory experiment by Gerard (13), who allowed groups to arrive at a unanimous decision concerning the best solution for a social problem. A week later he placed the members in different groups, where they found the decision of their previous organizations opposed by their new colleagues (who were paid participants assigned the task of disagreeing with the subjects). Pressures to change were resisted in the latter groups to the degree that the former groups were attractive to the subjects. The earlier described study by Kelley concerning the beliefs of Catholics, indicates that one is most likely to adhere, at any moment, to the beliefs of the group that is most present and prominent for one.

We know very little about how the contradictions stemming from multiple group memberships or multiple role prescriptions are resolved. Nor is there much evidence concerning the conditions which may cause one group norm to override all others. Newcomb (29) has presented an excellent statement of the problem and a summary of the available findings. It is clear that more research is needed about matters such as these before we shall have a complete understanding of the influence of group pressures on the behavior of the individual.

Overview of Research Reported in this Section

The research on group pressures and group standards has been conducted in a wide variety of ways and places. The work reported in this section has been chosen to illustrate different approaches and methods used in determining some of the cause and effect relations in the dynamics of social influence. As we have noted, forces toward uniformity may originate in a cognitive conflict within an individual or in social pressures placed upon him by fellow members. The first three studies are concerned with forces arising in a person and with the cognitive conflicts created by these pressures.

Chapter 10, by Asch, is a description of research in which conflict is generated for a person when he observes that his own judgment differs from the judgments of others. In these investigations the subject is placed with a number of "assistants" who have been coached by the experimenter

to give the wrong answers. Asch describes conditions which cause the subject to be more likely to deny the evidence of his own senses and to alter his beliefs to agree with those of the assistants. In general the conditions are those which weaken his confidence in his own perceptions and heighten his confidence that the others' views must be correct.

In Chapter 11 Deutsch and Gerard report an experiment in which they examined additional sources of conformity in a situation similar to the one employed by Asch. They show that a person is more likely to conform to the beliefs of others if he is required to state his views publicly rather than privately, if he is a member of group rather than a nonmember, and if he is not urged by others to hold to his own beliefs rather than being supported in them.

The sources and resolutions of cognitive conflicts are considered in Chapter 12 by Festinger and Aronson. They base their discussion upon a theory of cognitive dissonance (11), assuming: "that the simultaneous existence of cognitions which in one way or another do not fit together (dissonance) leads to effort on the part of the person to somehow make them fit better (dissonance reduction)." They show that a dull group is more likely to be attractive if one has undergone considerable stress to become a member than if one has been admitted to it with little effort (Chap. 4). If he experiences disagreement in his relations with others he develops dissonance and its magnitude depends upon the importance of the person with whom he disagrees and the importance of the issue on which there is disagreement. In order to reduce dissonance, he may use any of a variety of methods. Studies are reported concerning determinants in the use of the various avenues of dissonance reduction.

The next four chapters illustrate pressures toward uniformity arising in the interaction among group members.

In Chapter 13 Siegel and Siegel present a "natural" experiment demonstrating that membership in a group may ultimately have effects upon members' attitudes. The site for the study was a university campus where women students participated in a "drawing" to determine their housing for the following year. Information was available to the Siegels concerning the attitudes of the women before they were assigned their housing and again a year later. The results show that attitudes of the girls tended to reflect, after the year, the most common beliefs of the members in the groups they joined.

In Chapter 14 Festinger, Schachter, and Back examine the strength of group standards with groups of varied cohesiveness in two housing projects. By means of interviews repeated over a period of time, they determine the cohesiveness of the various courts and buildings in the projects and the attitudes of the residents toward a tenants' organization. They show that the cohesive courts are likely to have more uniformity of atti-

tude toward the organization and more uniformity of behavior in the degree to which they participate in the organization. One of the important findings is that persons who are deviant from the norm within their court are less likely to be accepted as friends by the rest of the persons living there.

The latter finding was subjected to more rigorous study in a laboratory study by Schachter (Chap. 15). The experimenter invited students to join a club organized for the purpose of discussing topics of lively interest. Three paid participants attended each meeting, two of whom conformed to the beliefs of the group while the third took a clearly deviant position. It was noted earlier in this chapter that the deviant was rejected, while the other two participants were accepted; also that rejection of the deviant was stronger in groups with high cohesiveness and where his deviancy concerned matters highly relevant to the purposes of the group.

In Chapter 16 Festinger develops the theory on which the two previously described studies were based and explains how cohesiveness of a group will determine the power that a group has in requiring uniformity of behavior among the members.

Converse and Campbell, in Chapter 17, demonstrate that the theory proposed by the preceding writers can be usefully employed in explaining voting behavior and identification in political parties. Using data obtained in several national sample surveys of voting preferences, they report that persons who are most identified with their party are most likely to vote in accordance with the party's plans, and further observe that the impact of political matters upon the standards of nonpolitical groups depends upon the degree that political issues are relevant for these groups.

The final chapter in this section (Chap. 18) discusses an experimental attempt to change the behavior of individuals by varying the degree they participated in discussions of an impending change in their method of work. The logic behind the study is that a group standard is a property of the group as a whole. If one is to change this standard and thus the behavior of individuals, it can best be done by having the entire group participate in the decision to make the change. In their field experiment, Coch and French, observe that changes in behavior are greater the more voice members have in affecting the new work methods.

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10

Effects of Group Pressure upon the Modification and Distortion of Judgments

S. E. Asch

We shall here describe in summary form the conception and first findings of a program of investigation into the conditions of independence and submission to group pressure. This program is based on a series of earlier studies conducted by the writer while a Fellow of the John Simon Guggenheim Memorial Foundation.

Our immediate object was to study the social and personal conditions that induce individuals to resist or to yield to group pressures when the latter are perceived to be *contrary to fact.* The issues which this problem raises are of obvious consequence for society; it can be of decisive importance whether or not a group will, under certain circumstances, submit to existing pressures. Equally direct are the consequences for individuals and our understanding of them, since it is a decisive fact about a person whether he possesses the freedom to act independently, or whether he characteristically submits to group pressures.

The problem under investigation requires the direct observation of certain basic processes in the interaction between individuals, and between individuals and groups. To clarify these seems necessary if we are to make fundamental advances in the understanding of the formation and reorganization of attitudes, of the functioning of public opinion, and of the operation of propaganda. Today we do not possess an adequate theory of these central psychosocial processes. Empirical investigation has been predominately controlled by general propositions concerning group influence which have as a rule been assumed, but not tested. With few exceptions, investigation has relied upon descriptive formulations concerning the operation of suggestion and prestige, the inadequacy of which is becoming increasingly obvious, and upon schematic applications of stimulus-response theory.

Basic to the current approach has been the axiom that group pressures

From a chapter with the same title in H. Guetzkow (Ed.), *Groups, leadership, and men.* Pittsburgh: Carnegie Press, 1951. Reprinted by permission of the author and the publishers.

characteristically induce psychological changes *arbitrarily,* in far-reaching disregard of the material properties of the given conditions. This mode of thinking has almost exclusively stressed the slavish submission of individuals to group forces, has neglected to inquire into their possibilities for independence and for productive relations with the human environment, and has virtually denied the capacity of men under certain conditions to rise above group passion and prejudice. It was our aim to contribute to a clarification of these questions, important both for theory and for their human implications, by means of direct observation of the effects of groups upon the decisions and evaluations of individuals.

The Experiment and First Results

To reach our objective, we developed an experimental technique which has served as the basis for the present series of studies. We employed the procedure of placing an individual in a relation of radical conflict with all the other members of the group, of measuring its effect upon him in quantitative terms, and of describing its psychological consequences. A group of eight individuals was instructed to judge a series of simple, clearly structured perceptual relations—to match the length of a given line with one of three unequal lines. Each member of the group announced his judgments publicly. In the midst of this monotonous "test," one individual found himself suddenly contradicted by the entire group, and this contradiction was repeated again and again in the course of the experiment. The group in question had, with the exception of one member, previously met with the experimenter and received instructions to respond at certain points with wrong—and unanimous—judgments. The errors of the majority were large (ranging between ½" and 1¾"), and of an order not encountered under control conditions. The outstanding person—the critical subject, whom we had placed in the position of a *minority of one* in the midst of a *unanimous majority*—was the object of investigation. He faced, possibly for the first time in his life, a situation in which a group unanimously contradicted the evidence of his senses.

This procedure was the starting point of the investigation and the point of departure for the study of further problems. Its main features were the following: (*a*) The critical subject was submitted to two contradictory and irreconcilable forces: the evidence of his own experience of an utterly clear perceptual fact, and the unanimous evidence of a group of equals. (*b*) Both forces were part of the immediate situation; the majority was concretely present, surrounding the subject physically. (*c*) The critical subject, who was requested together with all the others to state his judgments publicly, was obliged to declare himself and take a definite stand vis-à-vis the group. (*d*) The situation possessed a self-con-

tained character. The critical subject could not avoid or evade the dilemma by reference to conditions external to the experimental situation. (It may be mentioned at this point that the forces generated by the given conditions acted so quickly upon the critical subjects that instances of suspicion were rare.)

The technique employed permitted a simple quantitative measure of the "majority effect" in terms of the frequency of errors in the direction of the distorted estimates of the majority. At the same time, we were concerned from the start to obtain evidence of the ways in which the subjects perceived the group, to establish whether they became doubtful, whether they were tempted to join the majority. Most important, it was our object to establish the grounds of the subject's independence or yielding; whether, for example, the yielding subject was aware of the effect of the majority upon him, whether he abandoned his judgment deliberately or compulsively. To this end, we constructed a comprehensive set of questions which served as the basis of an individual interview immediately following the experimental period. Toward the conclusion of the interview each subject was informed fully of the purpose of the experiment, of his role, and of that of the majority. The reactions to the disclosure of the purpose of the experiment became in fact an integral part of the procedure. We may state here that the information derived from the interview became an indispensable source of evidence and insight into the psychological structure of the experimental situation, and in particular of the nature of the individual differences. Also, it was not justified or advisable to allow the subject to leave without giving him a full explanation of the experimental conditions. The experimenter has a responsibility to the subject to clarify his doubts and to state the reasons for placing him in the experimental situation. When this is done, most subjects react with interest and many express gratification at having lived through a striking situation which has some bearing on wider human issues.

Both the members of the majority and the critical subjects were male college students. We shall report the results for a total of 50 critical subjects in this experiment.

1. There was a marked movement toward the majority. One-third of all the estimates in the critical group were errors identical with or in the direction of the distorted estimates of the majority. The significance of this finding becomes clear in the light of the virtual absence of errors in control groups, the members of which recorded their estimates in writing.

2. At the same time, the effect of the majority was far from complete. The preponderance of estimates in the critical group (68%) was correct despite the pressure of the majority.

3. We found evidence of extreme individual differences. There were in the critical group subjects who remained independent without excep-

tion, and there were those who went nearly all the time with the majority. (The maximum possible number of errors was 12, while the actual range of errors was 0–11.) One-fourth of the critical subjects was completely independent; at the other extreme, one-third of the group displaced the estimates toward the majority in one-half or more of the trials.

The differences between the critical subjects in their reactions to the given conditions were equally striking. There were subjects who remained completely confident throughout. At the other extreme were those who became disorientated, doubt-ridden, and experienced a powerful impulse not to appear different from the majority.

For purposes of illustration we shall include a brief description of one independent and one yielding subject.

Independent. After a few trials he appeared puzzled, hesitant. He announced all disagreeing answers in the form of, "Three, sir. Two, sir." Not so with the unanimous answers. At trial 4 he answered immediately after the first member of the group, shook his head, blinked, and whispered to his neighbor, "Can't help it, that's one." His later answers came in a whispered voice, accompanied by a deprecating smile. At one point he grinned embarrassedly, and whispered explosively to his neighbor: "I always disagree—darn it!" During the questioning, this subject's constant refrain was: "I called them as I saw them, sir." He insisted that his estimates were right without, however, committing himself as to whether the others were wrong, remarking that, "That's the way I see them, and that's the way they see them." If he had to make a practical decision under similar circumstances, he declared, "I would follow my own view, though part of my reason would tell me that I might be wrong." Immediately following the experiment, the majority engaged this subject in a brief discussion. When they pressed him to say whether the entire group was wrong and he alone right, he turned upon them defiantly, exclaiming: "You're *probably* right, but you may be wrong!" To the disclosure of this experiment, this subject reacted with the statement that he felt "exultant and relieved," adding, "I do not deny that at times I had the feeling: 'To heck with it, I'll go along with the rest.' "

Yielding. This subject went with the majority in 11 out of 12 trials. He appeared nervous and somewhat confused, but he did not attempt to evade discussion; on the contrary, he was helpful and tried to answer to the best of his ability. He opened the discussion with the statement, "If I'd been the first I probably would have responded differently." This was his way of stating that he had adopted the majority estimates. The primary factor in his case was a loss of confidence. He perceived the majority as a decided group, acting without hesitation: "If they had been doubtful I probably would have changed, but they answered with such confidence." Certain of his errors, he explained, were due to the doubtful nature of

the comparisons; in such instances he went with the majority. When the object of the experiment was explained, the subject volunteered, "I suspected about the middle—but tried to push it out of my mind." It is of interest that his suspicion was not able to restore his confidence and diminish the power of the majority. Equally striking is his report that he assumed the experiment to involve an "illusion" to which the others, but not he, were subject. This assumption, too, did not help to free him. On the contrary, he acted as if his divergence from the majority was a sign of defect. The principal impression this subject produced was of one so caught up by immediate difficulties that he lost clear reasons for his actions, and could make no reasonable decisions.

A First Analysis of Individual Differences

On the basis of the interview data described earlier, we undertook to differentiate and describe the major forms of reaction to the experimental situation, which we shall now briefly summarize.

Among the *independent* subjects, we distinguished the following main categories:

1. Independence based on *confidence* in one's perception and experience. The most striking characteristic of these subjects is the vigor with which they withstand the group opposition. Though they are sensitive to the group, and experience the conflict, they show a resilience in coping with it, which is expressed in their continuing reliance on their perception and the effectiveness with which they shake off the oppressive group opposition.

2. Quite different are those subjects who are independent and *withdrawn*. These do not react in a spontaneously emotional way, but rather on the basis of explicit principles concerning the necessity of being an individual.

3. A third group of independent subjects manifest considerable tension and *doubt*, but adhere to their judgments on the basis of a felt necessity to deal adequately with the task.

The following were the main categories of reaction among the *yielding* subjects, or those who went with the majority during one-half or more of the trials:

1. *Distortion of perception* under the stress of group pressure includes a very few subjects who yield completely, but are not aware that their estimates have been displaced or distorted by the majority. These subjects report that they came to perceive the majority estimates as correct.

2. Most submitting subjects experience *distortion of judgment*. The factor of greatest importance in this group is a decision the subjects reach that their perceptions are inaccurate, and that those of the majority are

correct. These subjects suffer from primary doubt and lack of confidence; on this basis they feel a strong tendency to join the majority.

3. A group of subjects experiencing *distortion of action* do not suffer a modification of perception nor do they conclude that they are wrong. They yield because of an overmastering need not to appear different from or inferior to others, because of an inability to tolerate the appearance of defectiveness in the eyes of the group. These subjects suppress their observations, and voice the majority position with awareness of what they are doing.

The results are sufficient to establish that independence and yielding are not psychologically homogeneous, that submission to group pressure (and freedom from pressure) can be the result of different psychological conditions. It should also be noted that the categories described above, being based exclusively on the subjects' reactions to the experimental conditions, are descriptive and do not presume to explain why a given individual responded in one way rather than another. The further exploration of the basis for the individual differences is a separate task upon which we are now at work.

Experimental Variations

The results described are clearly a joint function of two broadly different sets of conditions. They are determined first by the specific external conditions, by the particular character of the relation between social evidence and one's own experience. Second, the presence of pronounced individual differences points to the important role of personal factors, of factors connected with the individual's character structure. We reasoned that there are group conditions which would produce independence in all subjects, and that there probably are group conditions which would induce intensified yielding in many, though not in all. Accordingly we followed the procedure of *experimental variation,* systematically altering the quality of social evidence by means of systematic variation of group conditions. Secondly, we deemed it reasonable to assume that behavior under the experimental social pressure is significantly related to certain basic, relatively permanent characteristics of the individual. The investigation has moved in both of these directions. Because the study of the character qualities which may be functionally connected with independence and yielding is still in progress, we shall limit the present account to a sketch of the representative experimental variations.

The Effect of Nonunanimous Majorities

Evidence obtained from the basic experiment suggested that the condition of being exposed *alone* to the opposition of a "compact majority"

may have played a decisive role in determining the course and strength of the effects observed. Accordingly we undertook to investigate in a series of successive variations the effects of *nonunanimous* majorities. The technical problem of altering the uniformity of a majority is, in terms of our procedure, relatively simple. In most instances, we merely directed one of the members of the instructed group to deviate from the majority in prescribed ways. It is obvious that we cannot hope to compare the performance of the same individual in two situations on the assumption that they will remain independent of each other. At best, we can investigate the effect of an earlier upon a later experimental condition. The comparison of different experimental situations therefore requires the use of different but comparable groups of critical subjects. This is the procedure we have followed. In the variations to be described, we have maintained the conditions of the basic experiment (e.g., the sex of the subjects, the size of the majority, the content of the task, and so on) save for the specific factor that was varied. The following were some of the variations we studied.

1. *The presence of a "true partner."* (*a*) In the midst of the majority were *two* naive, critical subjects. The subjects were separated spatially, being seated in the fourth and eighth positions, respectively. Each therefore heard his judgment confirmed by one other person (provided the other person remained independent), one prior to and the other subsequent to announcing his own judgment. In addition, each experienced a break in the unanimity of the majority. There were six pairs of critical subjects. (*b*) In further variation, the "partner" to the critical subject was a member of the group who had been instructed to respond correctly throughout. This procedure permits the exact control of the partner's responses. The partner was always seated in the fourth position; he therefore announced his estimates in each case before the critical subject.

The results clearly demonstrate that a disturbance of the unanimity of the majority markedly increased the independence of the critical subjects. The frequency of promajority errors dropped to 10.4% of the total number of estimates in variation *a*, and to 5.5% in variation *b*. These results are to be compared with the frequency of yielding to the unanimous majorities in the basic experiment, which was 32% of the total number of estimates. It is clear that the presence in the field of *one other* individual who responded correctly was sufficient to deplete the power of the majority, and in some cases to destroy it. This finding is all the more striking in the light of other variations which demonstrate the effect of even small minorities, provided they are unanimous. Indeed, we have been able to show that a majority of three is, under the given conditions, far more effective than a majority of eight containing one dissenter. That critical subjects will under these conditions free them-

selves of a majority of seven and join forces with one other person in the minority is, we believe, a result significant for theory. It points to a fundamental psychological difference between the condition of being alone and having a minimum of human support. It further demonstrates that the effects obtained are not the result of a summation of influences proceeding from each member of the group; it is necessary to conceive the results as being relatively determined.

2. *Withdrawal of a "true partner."* What will be the effect of providing the critical subject with a partner who responds correctly, and of then withdrawing the partner? The critical subject started with a partner who responded correctly. The partner was a member of the majority who had been instructed to respond correctly and to "desert" to the majority in the middle of the experiment. This procedure permits the observation of the same subject in the course of transition from one condition to another. The withdrawal of the partner produced a powerful and unexpected result. We had assumed that the critical subject, having gone through the experience of opposing the majority with a minimum of support, would maintain his independence when alone. Contrary to this expectation, we found that the experience of having had and then lost a partner restored the majority effect to its full force, the proportion of errors rising to 28.5% of all judgments, in contrast to the preceding level of 5.5%. Further experimentation is needed to establish whether the critical subjects were responding to the sheer fact of being alone, or to the fact that the partner abandoned them.

3. *Late arrival of a "true partner."* The critical subject started as a minority of one in the midst of a unanimous majority. Toward the conclusion of the experiment, one member of the majority "broke" away and began announcing correct estimates. This procedure, which reverses the order of conditions of the preceding experiment, permits the observation of the transition from being alone to being a member of a pair against a majority. It is obvious that those critical subjects who were independent when alone would continue to be so when joined by another partner. The variation is therefore of significance primarily for those subjects who yielded during the first phase of the experiment. The appearance of the late partner exerts a freeing effect, reducing the level to 8.7%. Those who had previously yielded also became markedly more independent, but not completely so, for they continued to yield more than previously independent subjects. The reports of the subjects do not cast much light on the factors responsible for the result. It is our impression that, having once committed himself to yielding, the individual finds it difficult and painful to change his direction. To do so is tantamount to a public admission that he has not acted rightly. He therefore follows the precari-

ous course he has already chosen in order to maintain an outward semblance of consistency and conviction.

4. *The presence of a "compromise partner."* The majority was consistently extremist, always matching the standard with the most unequal line. One instructed subject (who, as in the other variations, preceded the critical subject) also responded incorrectly, but his estimates were always intermediate between the truth and the majority position. The critical subject therefore faced an extremist majority whose unanimity was broken by one more moderately erring person. Under these conditions the frequency of errors was reduced, but not significantly. However, the lack of unanimity determined in a strikingly consistent way the *direction* of the errors. The preponderance of the errors, 75.7% of the total, was moderate, whereas in the parallel experiment in which the majority was unanimously extremist (i.e., with the "compromise partner" excluded), the incidence of moderate errors was reduced to 42% of the total. As might be expected, in a unanimously moderate majority, the errors of the critical subjects were without exception moderate.

The Role of Majority Size

To gain further understanding of the majority effect, we varied the size of the majority in several different variations. The majorities, which were in each case unanimous, consisted of 16, 8, 4, 3, and 2 persons, respectively. In addition, we studied the limiting case in which the critical subject was opposed by one instructed subject. Table 12.1 contains the

TABLE 12.1

ERRORS OF CRITICAL SUBJECTS WITH UNANIMOUS MAJORITIES OF DIFFERENT SIZE

Size of Majority	Control	1	2	3	4	8	16
N	37	10	15	10	10	50	12
Mean number of errors	0.08	0.33	1.53	4.0	4.20	3.84	3.75
Range of errors	0–2	0–1	0–5	1–12	0–11	0–11	0–10

means and the range of errors under each condition.

With the opposition reduced to one, the majority effect all but disappeared. When the opposition proceeded from a group of two, it produced a measurable though small distortion, the errors being 12.8% of the total number of estimates. The effect appeared in full force with a majority of three. Larger majorities of four, eight, and sixteen did not produce effects greater than a majority of three.

The effect of a majority is often silent, revealing little of its operation to the subject, and often hiding it from the experimenter. To examine the range of effects it is capable of inducing, decisive variations of conditions are necessary. An indication of one effect is furnished by the following variation, in which the conditions of the basic experiment were simply reversed. Here the majority, consisting of a group of 16, was naive; in the midst of it we placed a single individual who responded wrongly according to instructions. Under these conditions, the members of the naive majority reacted to the lone dissenter with amusement and disdain. Contagious laughter spread through the group at the droll minority of one. Of significance is the fact that the members lack awareness that they draw their strength from the majority, and that their reactions would change radically if they faced the dissenter individually. In fact, the attitude of derision in the majority turns into seriousness and increased respect as soon as the minority is increased to three. These observations demonstrate the role of social support as a source of power and stability, in contrast to the preceding investigations which stressed the effects of withdrawal of social support, or, to be more exact, the effects of social opposition. Both aspects must be explicitly considered in a unified formulation of the effects of group conditions on the formation and change of judgments.

The Role of the Stimulus-Situation

It is obviously not possible to divorce the quality and course of the group forces which act upon the individual from the specific stimulus-conditions. Of necessity, the structure of the situation molds the group forces and determines their direction as well as their strength. Indeed, this was the reason that we took pains in the investigations described above to center the issue between the individual and the group around an elementary and fundamental matter of fact. And there can be no doubt that the resulting reactions were directly a function of the contradiction between the objectively grasped relations and the majority position.

These general considerations are sufficient to establish the need of varying the stimulus-conditions and of observing their effect on the resulting group forces. We are at present conducting a series of investigations in which certain aspects of the stimulus-situation are systematically altered.

One of the dimensions we are examining is the magnitude of discrepancies above the threshold. Our technique permits an easy variation of this factor, since we can increase or decrease at will the deviation of the majority from the given objective conditions. Hitherto we have studied the

effect of a relatively moderate range of discrepancies. Within the limits of our procedure, we find that different magnitudes of discrepancy produce approximately the same amount of yielding. However, the quality of yielding alters: as the majority becomes more extreme, there occurs a significant increase in the frequency of "compromise" errors. Further experiments are planned in which the discrepancies in question will be extremely large and small.

We have also varied systematically the structural clarity of the task, including in separate variations judgments based on mental standards. In agreement with other investigators, we find that the majority effect grows stronger as the situation diminishes in clarity. Concurrently, however, the disturbance of the subjects and the conflict-quality of the situation decrease markedly. We consider it of significance that the majority achieves its most pronounced effect when it acts most painlessly.

Summary

We have investigated the effects upon individuals of majority opinions when the latter were seen to be in a direction contrary to fact. By means of a simple technique we produced a radical divergence between a majority and a minority, and observed the ways in which individuals coped with the resulting difficulty. Despite the stress of the given conditions, a substantial proportion of individuals retained their independence throughout. At the same time a substantial minority yielded, modifying their judgments in accordance with the majority. Independence and yielding are a joint function of the following major factors: (*a*) The character of the stimulus situation. Variations in structural clarity have a decisive effect: with diminishing clarity of the stimulus-conditions, the majority effect increases. (*b*) The character of the group forces. Individuals are highly sensitive to the structural qualities of group opposition. In particular, we demonstrated the great importance of the factor of unanimity. Also, the majority effect is a function of the size of group opposition. (*c*) The character of the individual. There were wide, and indeed, striking differences among individuals within the same experimental situation. The hypothesis was proposed that these are functionally dependent on relatively enduring character differences; in particular, those pertaining to the person's social relations.

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11

A Study of Normative and Informational Social Influences upon Individual Judgment

Morton Deutsch and Harold B. Gerard

By now, many experimental studies (e.g., 1, 3, 6) have demonstrated that individual psychological processes are subject to social influences. Most investigators, however, have not distinguished among different kinds of social influences; rather, they have carelessly used the term "group" influence to characterize the impact of many different kinds of social factors. In fact, a review of the major experiments in this area—e.g., those by Sherif (6), Asch (1), Bovard (3)—would indicate that the subjects in these experiments as they made their judgments were *not* functioning as *members* of a group in any simple or obvious manner. The subject, in the usual experiment in this area, made perceptual judgments in the physical presence of others after hearing their judgments. Typically, the subject was *not* given experimental instructions which made him feel that he was a member of a group faced with a common task requiring cooperative effort for its most effective solution. If "group" influences were at work in the foregoing experiments, they were subtly and indirectly created rather than purposefully created by the experimenter.

Hypotheses

The purpose of this paper is to consider two types of social influence, "normative" and "informational," which we believe were operative in the experiments mentioned above, and to report the results of an experiment bearing upon hypotheses that are particularly relevant to the former influence. We shall define a *normative social influence* as an in-

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fluence to conform with the positive expectations [1] of another.[2] An *informational social influence* may be defined as an influence to accept information obtained from another as *evidence* about reality. Commonly these two types of influence are found together. However, it is possible to conform behaviorally with the expectations of others and say things which one disbelieves but which agree with the beliefs of others. Also, it is possible that one will accept an opponent's beliefs as evidence about reality even though one has no motivation to agree with him, per se.

Our hypotheses are particularly relevant to normative social influence upon individual judgment. We shall not elaborate the theoretical rationales for the hypotheses, since they are for the most part obvious and they follow from other theoretical writings (e.g., 4, 5).

Hypothesis 1. Normative social influence upon individual judgments will be greater among individuals forming a group than among an aggregation of individuals who do not compose a group.[3]

That is, even when susceptibility to informational social influence is equated, we would predict that the greater susceptibility to normative social influence among group members would be reflected in the greater group influence upon individual judgment. This is not to say that individuals, even when they are not group members, may not have some motivation to conform to the expectations of others—e.g., so as to ingratiate themselves or so as to avoid ridicule.

Hypothesis 2. Normative social influence upon individual judgment will be reduced when the individual perceives that his judgment cannot be identified or, more generally, when the individual perceives no pressure to conform directed at him from others.

Hypothesis 3. Normative social influence to conform to one's own judgment will reduce the impact of the normative social influence to conform to the judgment of others.

Hypothesis 4. Normative social influence to conform to one's own judg-

[1] By positive expectations we mean to refer to those expectations whose fulfillment by another leads to or reinforces positive rather than negative feelings, and whose non fulfillment leads to the opposite, to alienation rather than solidarity; conformity to negative expectations, on the other hand, leads to or reinforces negative rather than positive feelings.

[2] The term *another* is being used inclusively to refer to "another person," to a "group," or to one's "self." Thus, a normative social influence can result from the expectations of oneself, or of a group, or of another person.

[3] Generally one would also expect that group members would be more likely to take the judgments of other group members as trustworthy evidence for forming judgments about reality and, hence, they would be more susceptible to informational social influence than would nongroup members. The greater trustworthiness usually reflects more experience of the reliability of the judgments of other members and more confidence in the benevolence of their motivations. However, when group members have had no prior experience together and when it is apparent in both the group and nongroup situations that the others are motivated and in a position to report correct judgments, there is no reason to expect differential susceptibility to informational social influence among group and nongroup members.

ment from another as well as from oneself will be stronger than normative social influence from oneself.

Normative social influence from oneself to conform to one's own judgment may be thought of as an internalized social process in which the individual holds expectations with regard to his own behavior; conforming to positive self-expectations leads to feelings of self-esteem or self-approval while nonconformity leads to feelings of anxiety or guilt. In general, one would expect that the strength of these internalized self-expectations would reflect the individual's prior experiences with them as sources of need satisfaction—e.g., by conforming to his own judgments or by self-reliance he has won approval from such significant others as his parents. As Hypothesis 4 indicates, we believe that contemporaneous social pressure to conform to one's own judgment may supplement, and perhaps be even stronger than, the individual's internalized pressure to conform to his own judgment.

Two additional hypotheses, dealing with the effect of difficulty of judgment, are relevant to one of the experimental variations. They follow:

Hypothesis 5. The more uncertain the individual is about the correctness of his judgment, the more likely he is to be susceptible to both normative and informational social influences in making his judgment.

Hypothesis 6. The more uncertain the individual is about the correctness of the judgment of others, the less likely he is to be susceptible to informational social influence in making his judgment.[4]

Method

Subjects. One hundred and one college students from psychology courses at New York University were employed as subjects. The study was defined for the subjects as an experimental study of perception.

Procedure. We employed the experimental situation developed by Asch (1) with certain modifications and variations which are specified

[4] Although we have no data relevant to this hypothesis, we present it to qualify Hypothesis 5 and to counteract an assumption in some of the current social psychological literature. Thus, Festinger (5) has written that where no physical reality basis exists for the establishment of the validity of one's belief, one is dependent upon social reality (i.e., upon the beliefs of others). Similarly, Asch (2) has indicated that group influence grows stronger as the judgmental situation diminishes in clarity. The implication of Hypothesis 6 is that if an individual perceives that a situation is objectively difficult to judge—that others as well as he experience the situation in the same way (i.e., as being difficult and as having uncertainty about their judgments)—he will not trust their judgments any more than he trusts his own. It is only as his confidence in their judgments increases (e.g., because he deems that agreement among three uncertain judges provides more reliable evidence than one uncertain judge) that the judgments of others will have informational social influence. However (at any particular level of confidence in the judgment of others), one can predict that as his confidence in his own judgment decreases he will be more susceptible to normative social influence. With decreasing self-confidence there is likely to be less of a commitment to one's own judgment and hence, less influence not to conform to the judgments of others.

below. For detailed description of the procedures utilized by Asch and replicated in this experiment, Asch's publication should be consulted. The basic features of the Asch situation are: (*a*) the subjects are instructed that they are participating in a perceptual experiment, wherein they have to match accurately the length of a given line with one of three lines; (*b*) correct judgments are easy to make; (*c*) in each experimental session there is only one *naive* person, the other participants, while ostensibly subjects, are in fact "stooges" who carry out the experimenter's instructions; (*d*) each participant (i.e., the naive person and the stooges) has to indicate his judgments publicly; (*e*) on 12 of the 18 perceptual judgments the stooges announce wrong and unanimous judgments, the errors of the stooges are large and clearly in error; (*f*) the naive person and the stooges are in a face-to-face relationship and have been previously acquainted with one another.[5]

To test the hypotheses set forth in the foregoing section, the following experimental variations upon Asch's situation were employed:

1. *The face-to-face situation.* This was an exact replication of Asch's situation except for the following minor modifications: (*a*) Only three stooges, rather than eight, were employed[6]; (*b*) the subject and the stooges were unacquainted prior to the experiment; and (*c*) two series of 18 judgments were employed. In one series (the visual series), the lines were physically present when the subject and the stooges announced their judgments; in the other series (the memory series), the lines were removed before any one announced his judgment. In the memory series,

[5] Inspection of the Asch situation would suggest that informational social influence would be strongly operative. As Asch has put it (2, 461): "The subject knows (*a*) that the issue is one of fact; (*b*) that a correct result is possible; (*c*) that only one result is correct; (*d*) that the others and he are oriented to and reporting about the same objectively given relations; (*e*) that the group is in unanimous opposition at certain points with him."

He further perceives that the others are motivated to report a correct judgment. In such a situation, the subject's accumulated past experience would lead him to expect that he could rely on the judgments of others, especially if they all agreed. That is, even if his eyes were closed he might feel that he could safely risk his life on the assumption that the unanimous judgments of the others were correct. This is a strong informational social influence and one would expect it to be overriding except for the fact that the subject has his eyes open and receives information from a source which he also feels to be completely trustworthy—i.e., from his own perceptual apparatus. The subject is placed in strong conflict because the evidences from two sources of trustworthy information are in opposition.

In the Asch situation, it is apparent that, in addition to informational social influence, normative social influence is likely to be operating. The naive subject is in a face-to-face situation with acquaintances and he may be motivated to conform to their judgments in order to avoid being ridiculed, or being negatively evaluated, or even possibly out of a sense of obligation. While it may be impossible to remove completely the impact of normative social influence upon any socialized being, it is evident that the Asch situation allows much opportunity for this type of influence to operate.

[6] Asch found that three stooges were about as effective in influencing the subjects as eight.

approximately three seconds after the lines were removed the first stooge was asked to announce his judgment. The sequences of visual and memory series were alternated so that approximately half the subjects had the memory series first and half had the visual series first.

2. *The anonymous situation.* This situation was identical with the face-to-face situation except for the following differences: (*a*) Instead of sitting in the visual presence of each other, the participants were separated by partitions which prevented them from talking to each other or seeing one another; (b) Instead of announcing their judgments by voice, they indicated their judgments by pressing a button; (*c*) No stooges were employed. Each participant was led to believe he was Subject No. 3 and the others were No. 1, No. 2, and No. 4. He was told that when the experimenter called out "Subject No. 3" he was to indicate his judgment by pressing one of three buttons (A, B, or C) which corresponded to what he thought the correct line was. When a subject pressed a given button, a corresponding bulb lit on his own panel and on a hidden master panel. Presumably the appropriate bulb also lit on the panels of each of the other participants but, in fact, the bulbs on any subject's panel were not connected to the buttons of the other subjects. When the experimenter called for the judgments of Subject No. 1, of Subject No. 2, and of Subject No. 4, a concealed accomplice manipulated master switches which lit bulbs on each of the subject's panels that corresponded to judgments presumably being made by these respective persons. Subjects No. 1, No. 2, and No. 4 were, in effect, "electrical stooges" whose judgments were indicated on the panels of the four naive subjects (all of whom were Subject No. 3) by an accomplice of the experimenter who manipulated master switches controlling the lights on the panels of the naive subjects. The pattern of judgments followed by the "electrical stooges" was the same as that followed by the "live stooges" in the face-to-face situation. (*d*) In providing a rationale for being labeled Subject No. 3 for each of the naive subjects, we explained that due to the complicated wiring setup, his number had no relation to his seating position. Implicitly, we assumed that each subject would realize that it would be impossible for the others to identify that a judgment was being made by him rather than by any of two others. However, it is apparent from post-experiment questionnaires that many of the participants did not realize this. It seems likely that if we had made the anonymous character of the judgments clear and explicit to the subjects the effects of this experimental variation would have been even more marked.

3. *The group situation.* This situation was identical to the anonymous situation except that the subjects were instructed as follows:

> This group is one of twenty similar groups who are participating in this experiment. We want to see how accurately you can make judgments. We are going to give a reward to the five best groups—the five groups that make the

fewest errors on the series of judgments that you are given. The reward will be a pair of tickets to a Broadway play of your own choosing for each member of the winning group. An error will be counted any time one of you makes an incorrect judgment. That is, on any given card the group can make as many as four errors if you each judge incorrectly or you can make no errors if you each judge correctly. The five groups that make the best scores will be rewarded.

4. *The self-commitment variation.* This variation was employed in both the face-to-face and anonymous situations. In it, each subject was given a sheet of paper on which to write down his judgment before he was exposed to the judgments of the others. He was told not to sign the sheet of paper and that it would not be collected at the end of the experiment. After the first series of 18 judgments, the subjects threw away their sheets. They did not erase their recorded judgments after each trial as they did in the Magic Pad self-commitment variation.

4A. *The Magic Pad self-commitment variation.* This variation was employed in the anonymous situation. In it, each subject was given a Magic Writing Pad on which to write down his judgment before he was exposed to the judgments of the others. After each subject had been exposed to the judgment of the others and had indicated his own judgment, he erased his judgment on the Magic Writing Pad by lifting up the plastic covering. It was made convincingly clear to the subject that only he would ever know what he had written down on the pad.

5. *The public commitment variation.* This variation was employed in both the face-to-face situation and in the anonymous situation. In it, the subjects followed the same procedure as in the self-commitment variation except that they wrote down their initial judgments on sheets of paper which they signed and which they knew were to be handed to the experimenter after each series of 18 judgments.

Results

The primary data used in the analysis of the results are the errors made by the participants which were in the direction of the errors made by the stooges. We shall present first the data which are relevant to our hypotheses; later we shall present other information.

Hypothesis 1. The data relevant to the first hypothesis are presented in Table 1. The table presents a comparison of the anonymous situation in which the individuals were motivated to act as a group with the anonymous situation in which there was no direct attempt to induce membership motivation; in both situations, no self- or public commitment was made. The data provided strong support for the prediction that the normative social influence upon individual judgments will be greater among individuals forming a group than among individuals who do not

compose a group. The average member of the group made more than twice as many errors as the comparable individual who did not participate in the task as a member of a group.

Qualitative data from a postexperimental questionnaire, in which we asked the subject to describe any feelings he had about himself or about the others during the experiment, also support Hypothesis I. Seven out of the fifteen members in the "group" condition spontaneously mentioned a felt obligation to the other group members; none of the individuals in the nongroup condition mentioned any feeling of obligation to go along with the others.

TABLE 1

MEAN NUMBER OF SOCIALLY INFLUENCED ERRORS IN INDIVIDUAL JUDGMENT AMONG GROUP MEMBERS AND AMONG NONMEMBERS

EXPERIMENTAL TREATMENT	*N*	MEMORY SERIES	VISUAL SERIES	TOTAL
Group, anonymous, no commitment	15	6.87	5.60	12.47
Nongroup, anonymous, no commitment	13	3.15	2.77	5.92
			p values*	
		.01	.05	.001

* Based on a *t* test, using one tail of the distribution

TABLE 2

MEAN NUMBER OF SOCIALLY INFLUENCED ERRORS IN INDIVIDUAL JUDGMENT IN THE ANONYMOUS AND IN THE FACE-TO-FACE SITUATIONS

SITUATION	NO COMMITMENT				SELF-COMMITMENT				PUBLIC COMMITMENT			
	Visual	Memory	Total	*N*	Visual	Memory	Total	*N*	Visual	Memory	Total	*N*
Face-to-face	3.00	4.08	7.08	13	.92	.75	1.67	12	1.13	1.39	2.52	13
Anonymous	2.77	3.15	5.92	13	.64	.73	1.37	11	.92	.46	1.38	13

Hypothesis 2. To test the second hypothesis, it is necessary to compare the data from the face-to-face and anonymous situations among the individuals who were otherwise exposed to similar experimental treatments. Tables 2 and 3 present the relevant data. It is apparent that there was less social influence upon individual judgment in the anonymous as compared with the face-to-face situation. This lessening of social influence is

at the .001 level of statistical confidence even when the comparisons include the "commitment variations" as well as both the visual and the memory series of judgments. The interaction between the commitment variations and the anonymous, face-to-face variations, which is statistically significant, is such as to reduce the over-all differences between the anonymous and face-to-face situation; the differences between the face-to-face and the anonymous situations are most strongly brought out when there is no commitment. Similarly, if we compare the anonymous and face-to-face situations, employing the memory rather than the visual series, the effect of the normative influence upon judgments in the face-to-face situation is increased somewhat, but not significantly. That is, as we eliminate counter-normative influences (i.e., the "commitment") and as we weaken reality restraints (i.e., employ the "memory" rather than "visual" series), the normative influences in the face-to-face situation operate more freely.

The support for Hypothesis 2 is particularly striking in light of the fact that, due to faulty experimental procedure, the "anonymous" character

TABLE 3

p VALUES * FOR VARIOUS COMPARISONS OF SOCIALLY INFLUENCED ERRORS IN THE ANONYMOUS AND FACE-TO-FACE SITUATIONS

COMPARISON	TOTAL ERRORS
A *vs.* F	.001
A *vs.* F, no commitment	.001
A *vs.* F, self-commitment	.10
A *vs.* F, public commitment	.001
Interaction of commitment with A-F	.01

* *p* values are based on *t* tests, using one tail of distribution, derived from analyses of variation.

of the anonymous situation was not sufficiently impressed on some of the *Ss*. For these *Ss*, the anonymous situation merely protected them from the immediate, visually accessible pressure to conform arising from the lifted eyebrows and expressions of amazement by the stooges in the face-to-face situation. Complete feeling of anonymity would probably have strengthened the results.

Hypotheses 3 and 4. Tables 4, 5, and 6 present results showing the influence of the different commitment variations. The public and the self-commitment variations markedly reduce the socially influenced errors in both the face-to-face and anonymous situations. In other words, the data provide strong support for Hypothesis 3 which asserts that normative social influence to conform to one's own judgment will reduce the impact of the normative influence to conform to the judgment of others.

The data with regard to the influence of self-commitment are ambiguous in implication since the results of the two self-commitment variations —i.e., the "Magic Pad self-commitment" and the "self-commitment"— are not the same. The first self-commitment variation produced results

TABLE 4

p VALUES * FOR VARIOUS COMPARISONS OF SOCIALLY INFLUENCED ERRORS IN THE DIFFERENT COMMITMENT TREATMENTS

COMPARISON	TOTAL ERRORS	ERRORS ON VISUAL SERIES	ERRORS ON MEMORY SERIES
No commitment *vs.* public commitment, F	.001	.01	.001
No commitment *vs.* self-commitment, F	.001	.01	.001
Self-commitment *vs.* public commitment, F	.01	NS	NS
No commitment *vs.* self-commitment, A	.001	.01	.01
No commitment *vs.* public commitment, A	.001	.01	.002
Self-commitment *vs.* public commitment, A	NS	NS	NS

* *p* values are based on *t* tests, using one tail of the distribution, and derived from the analyses of variation

which are essentially the same as the public commitment variation, markedly reducing socially influenced errors. The Magic Pad self-commitment variation produced results which were different from the no

TABLE 5

MEAN NUMBER OF SOCIALLY INFLUENCED ERRORS IN JUDGMENTS IN THE ANONYMOUS SITUATION AS AFFECTED BY THE COMMITMENT VARIATIONS

NO COMMITMENT				MAGIC PAD SELF-COMMITMENT				SELF-COMMITMENT				PUBLIC COMMITMENT			
Visual	Memory	Total	*N*	Visual	Memory	Total	*N*	Visual	Memory	Total	*N*	Visual	Memory	Total	*N*
2.77	3.15	5.92	13	1.63	2.27	3.90	11	.64	.73	1.37	11	92	.46	1.38	13

commitment variation, reducing the errors to an extent which is statistically significant; however, unlike the first self-commitment variation, the Magic Pad self-commitment was significantly less effective than the public commitment in reducing socially influenced errors.

Our hunch is that the persons in the first self-commitment variation

perceived the commitment situation as though it were a public commitment and that this is the explanation of the lack of differences between these two variations. That is, writing their judgments indelibly supported the belief that "others can see what I have written." Subjects in the Magic Pad self-commitment variation, on the other hand, were literally wiping their initial judgments away in such a manner that they would be inaccessible to anyone. Hence, in the Magic Pad variation, the normative influences to conform to one's own judgment had to be sustained by the subject himself. Normative influences from the subject's self (to be, in a sense, true to himself) were undoubtedly also operating in the noncommitment variation. What the Magic Pad did was to prevent the subject

TABLE 6

p VALUES * FOR VARIOUS COMPARISONS OF SOCIALLY INFLUENCED ERRORS IN THE DIFFERENT COMMITMENT VARIATIONS

COMPARISON	TOTAL ERRORS	ERRORS ON VISUAL SERIES	ERRORS ON MEMORY SERIES
No commitment vs. Magic Pad self-commitment	.05	NS	NS
Magic Pad self-commitment vs. self-commitment	.005	NS	.05
Magic Pad self-commitment vs. public commitment	.001	NS	.01

* *p* values are based on *t* tests using one tail of the distribution

from distorting his recollection of his independent judgment after being exposed to the judgments of the others. Further, there is a theoretical basis for assuming that the commitment to a judgment or decision is increased following the occurrence of behavior based upon it. Hence, the behavior of writing one's judgment down on the Magic Pad makes the original decision less tentative and less subject to change. However, it is apparent that this internally sustained influence to conform with one's own judgment was not as strong as the combination of external and self-motivated influences. These results support our fourth hypothesis.

Hypothesis 5. Table 7 presents a comparison of the errors made on the visual and on the memory series of judgments. It is apparent that the participants were less influenced by the judgments of others when the judgments were made on a visual rather than on a memory basis. It is also evident from the data of Table 2 that the differences between the visual and memory series were reduced or disappeared when the participants wrote down their initial, independent judgments. These results

support our fifth hypothesis which asserts that the more uncertain the individual is about the correctness of his judgment, the more likely he is to be susceptible to social influences in making his judgment. Further support comes from the questionnaire data. Out of the 90 persons who filled out questionnaires, 51 indicated that they were more certain of their judgment when the lines were visually present, 2 were more certain when they were absent, and 39 were equally certain in both instances.

Being exposed first to the memory series rather than the visual series had the effect of making the subjects more susceptible to social influence

TABLE 7

SOCIALLY INFLUENCED ERRORS IN INDIVIDUAL JUDGMENTS AS AFFECTED BY THE STIMULUS TO BE JUDGED (VISUAL OR MEMORY)

	N	MEAN NUMBER OF ERRORS	*p* VALUE
Errors on visual series	99	2.20	.005 *
Errors on memory series	99	2.60	
Total errors when visual series was first	51	4.12	.005
Total errors when memory series was first	48	5.71	

* Based on a *t* test of differences between visual and memory series for each subject

upon their judgments throughout both series of judgments. In other words, a subject was more likely to make socially influenced errors on the memory series and, having allowed himself to be influenced by the others on this first series of judgments, he was more likely to be influenced on the visual series than if he had not previously participated in the memory series. It is as though once having given in to the social influence (and it is easier to give in when one is less certain about one's judgment), the individual is more susceptible to further social influences.

Discussion

A central thesis of this experiment has been that prior experiments which have been concerned with "group" influence upon individual judgment have, in fact, only incidentally been concerned with the type of social influence most specifically associated with groups, namely "normative social influence." Our results indicate that, even when normative social influence in the direction of an incorrect judgment is largely re-

moved (as in the anonymous situation), more errors are made by our subjects than by a control group of subjects making their judgments when alone.[7] It seems reasonable to conclude that the participant, even if not normatively influenced, may be influenced by the others in the sense that the judgments of others are taken to be a more or less trustworthy source of information about the objective reality with which he and the others are confronted.

It is not surprising that the judgments of others (particularly when they are perceived to be motivated and competent to judge accurately) should be taken as evidence to be weighed in coming to one's own judgment. From birth on, we learn that the perceptions and judgments of others are frequently reliable sources of evidence about reality. Hence, it is to be expected that if the perceptions by two or more people of the same objective situation are discrepant, each will tend to re-examine his own view and that of the others to see if they can be reconciled. This process of mutual influence does not necessarily indicate the operation of normative social influence as distinct from informational social influence. Essentially the same process (except that the influence is likely to be unilateral) can go on in interaction with a measuring or computing machine. For example, suppose one were to judge which of two lines is longer (as in the Müller-Lyer illusion) and then were given information that a measuring instrument (which past experience had led one to believe was infallible) came up with a different answer; certainly one might be influenced by this information. This influence could hardly be called a normative influence except in the most indirect sense.

While the results of prior experiments of "group" influence upon perception can be largely explained in terms of non-normative social influence, there is little doubt that normative influences were incidentally operative. However, these were the casual normative influences which can not be completely eliminated from any human situation, rather than normative influences deriving from specific group membership. Our experimental results indicate that when a group situation is created, even when the group situation is as trivial and artificial as it was in our groups, the normative social influences are grossly increased, producing considerably more errors in individual judgment.

The implications of the foregoing result are not particularly optimistic for those who place a high value on the ability of an individual to resist group pressures which run counter to his individual judgment. In the experimental situation we employed, the subject, by allowing himself to be influenced by the others, in effect acquiesced in the distortion of his

[7] Asch (2) reports that his control group of subjects made an average of considerably less than one error per subject.

judgment and denied the authenticity of his own immediate experience. The strength of the normative social influences that were generated in the course of our experiment was small; had it been stronger, one would have expected even more distortion and submission.

Our findings, with regard to the commitment variations, do, however, suggest that normative social influences can be utilized to buttress as well as to undermine individual integrity. In other words, normative social influence can be exerted to help make an individual be an individual and not merely a mirror or puppet of the group. Groups can demand of their members that they have self-respect, that they value their own experience, that they be capable of acting without slavish regard for popularity. Unless groups encourage their members to express their own, independent judgments, group consensus is likely to be an empty achievement. Group process which rests on the distortion of individual experience undermines its own potential for creativity and productiveness.

Summary and Conclusions

Employing modifications of the Asch situation, an experiment was carried out to test hypotheses concerning the effects of normative and informational social influences upon individual judgment. The hypotheses received strong support from the experimental data.

In discussion of our results, the thesis was advanced that prior studies of "group" influence upon individual judgment were only incidentally studies of the type of social influence most specifically associated with groups—i.e., of normative social influence. The role of normative social influence in buttressing as well as undermining individual experience was considered.

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12

The Arousal and Reduction of Dissonance in Social Contexts

Leon Festinger and Elliot Aronson

The theory of dissonance is a theory concerning psychological processes which go on, somehow, inside of the individual organism. The core notions of the theory are extremely simple. These notions are that the simultaneous existence of cognitions which in one way or another, do not fit together (dissonance) leads to effort on the part of the person to somehow make them fit better (dissonance reduction).

Of course, in order to make these notions amenable to empirical test and to give them predictive power, one must specify the conditions under which dissonance exists, the ways in which dissonance may be reduced, and the observable manifestations of attempts at dissonance reduction. We cannot, in this chapter, take the space to spell these things out. A detailed and more formal account of the theory and related research may be found elsewhere (10). What we will concentrate on here is the explication of how this theory concerning individual psychological process has relevance for, and can help us make predictions about, social behavior and group behavior. The chapter will consist of three parts: (*a*) Some introductory material to give the reader some impression of the scope of the theory and the kinds of behavior involved in dissonance reduction; (*b*) consideration of the group as a source of dissonance arousal; and (*c*) as an aid in the reduction of dissonance.

Throughout the chapter we will attempt to discuss the theory in connection with empirical data concentrating, for the most part, on recent material, that is, data which have been collected since the publication of the theory (10).

Some Derivations from Dissonance Theory

Although the theory is, in essence, a very simple one, it can be used to predict a wide range of human behavior. A few of the ramifications of the

This chapter was prepared especially for this volume.

theory will be discussed below. It should be stressed that in the majority of the experiments to be discussed only one avenue of dissonance reduction has been examined. This is not meant to imply, however, that only one means of dissonance reduction is possible in a particular situation. On the contrary, in uncontrolled situations many avenues for dissonance reduction are usually available.

Suppose, for example, that a person believes that the Democratic presidential candidate is the most qualified candidate for the position. For some reason, however, he votes for the Republican candidate. His cognition that the Democratic candidate is more qualified is dissonant with his cognition that he voted for the Republican candidate. This person might attempt to reduce dissonance by convincing himself that the Republican candidate is better than he had, at first, believed or that the Democratic candidate is less good. Such a change in his opinions would bring them more into line with his knowledge that he had voted for the Republican candidate.

His specific behaviors might involve: (*a*) subscribing to a Republican newspaper (where he'd be sure to read complimentary statements about the Republican candidate and derogatory statements about the Democratic candidate); (*b*) trying to associate with Republicans and trying to avoid Democrats; (*c*) trying to find subtle wisdom in the speeches of the Republican candidate which he hadn't noticed before, and the like. We have selected experiments for discussion below in an attempt to illustrate not only the variety of situations which produce dissonance but also the variety of ways in which dissonance reduction proceeds.

Dissonance as a Consequence of Decisions

If an individual chooses one from among several possible courses of action, he is almost certain to experience dissonance because the chosen alternative is seldom entirely positive and the unchosen alternatives are seldom entirely negative. His cognitions concerning any negative aspects of the chosen alternative are dissonant with his cognition that he chose it. Similarly, his cognitions concerning any positive aspects of the unchosen alternatives are dissonant with his cognition that he rejected these alternatives. Consequently, the greater the attractiveness of the rejected alternative relative to the chosen alternative, the greater will be the dissonance.

The theory of dissonance predicts that, following a decision, a person will attempt to convince himself that the chosen alternative is even more attractive (relative to the unchosen one) than he had previously thought.

Brehm (5) demonstrated that, following a decision between two al-

ternatives, there was a general tendency for people to rate the chosen alternative as being slightly more attractive than they had previously rated it; and to rate the rejected alternative as being slightly less attractive than they had previously rated it. Furthermore, Brehm found that the more nearly equal the initial attractiveness of the alternatives had been, the stronger was the effect obtained. In other words, dissonance reduction did ensue following a decision and the amount of dissonance reduction was related to the magnitude of dissonance created by the decision.

A subsequent experiment by Brehm and Cohen (7) tested two more implications concerning post-decision dissonance:

1. The greater the number of alternatives among which a person must choose, the greater would be the dissonance following the choice. The more alternatives which were rejected, the more knowledge there would be concerning favorable characteristics of these rejected alternatives. These cognitions would all be dissonant with the cognition concerning the alternative which the person actually chose.

2. The greater the qualitative dissimilarity between the alternatives among which the person must choose the greater would be the post-decision dissonance (assuming that the relative attractiveness of the alternatives is held constant). This follows from the fact that similar alternatives have many characteristics in common. Thus, some of the favorable aspects of the rejected alternatives are also favorable aspects of the chosen alternative. Cognitions concerning these aspects of similarity would not, hence, contribute to dissonance following the choice.

Brehm and Cohen asked children to rate how much they liked various toys. The experimenters explained that they were employed by toy manufacturers to find out what kind of toys people like. One week later they returned and offered the children a choice of one of the toys as a gift for having participated in the research. The children were then asked once more to rate how much they liked each of the toys. In this experiment, two variables were manipulated: (*a*) The number of alternatives. Some children were allowed to choose from among four toys; some children were given a choice between two toys. (*b*) The qualitative similarity of the alternatives. Some children had to choose from among toys which were qualitatively similar; e.g., swimming fins *vs.* swimming masks. Other children had to choose from among toys which were qualitatively dissimilar; e.g., swimming fins *vs.* archery sets.

The results supported both hypotheses. Regardless of the qualitative similarity of the toys, the greater the number of alternatives, the more the liking for the chosen toy increased and the more the liking for the unchosen toy decreased. Likewise, regardless of the number of alternatives, the greater the qualitative dissimilarity among the alternatives, the

greater was the observed change in the attractiveness of the toys in the direction of dissonance reduction.

Dissonance Arising from Temptation

If an individual commits an act which he regards as immoral in order to obtain a reward, his cognition that the act is immoral is dissonant with his cognition that he committed it. One way in which he could reduce this dissonance would be by changing his attitudes concerning the morality of the act, i.e., by convincing himself that the act is not very immoral. Thus, dissonance theory predicts that after a person has committed an immoral act, his attitudes concerning that act will be more lenient than they previously were.

On the other hand, if a person resists temptation and does not commit the act, his cognitions about the rewards he gave up are dissonant with his cognition concerning his behavior. Once again, he could reduce dissonance by changing his attitudes concerning the morality of the act. In this instance, the theory predicts that, after a person has resisted the temptation to commit an immoral act, his attitudes concerning the morality of the act will be more severe than they previously were. This would reduce dissonance by helping to justify the fact that he forsook the reward. The magnitude of the dissonance experienced by a person who commits an immoral act will, of course, be greater if the rewards he obtained by committing the act are small. Conversely, the magnitude of dissonance in the person who refrains from committing the immoral act will be greater if the reward he gave up by not engaging in the act is large.

These hypotheses were tested by Mills (16) in an experiment involving sixth-grade students. After measuring his subjects' attitudes toward cheating, the experimenter had them participate in a contest with prizes offered. In some classes a small prize was offered, in others a large prize. During the contest it was possible for the subjects to cheat. As may be expected, some of the students cheated while others did not.

One day later the subjects were again asked to indicate their attitudes toward cheating. The results confirmed the hypothesis. In general, those children who cheated became more lenient toward cheating, while those who did not cheat became more severe toward cheating. Again, the magnitude of this effect was a function of how much dissonance was introduced experimentally. Those children who cheated for a small prize changed more in feeling lenient about cheating than those who cheated for a large prize. Among those who did not cheat, the changes in the direction of greater severity toward cheating were larger for those who gave up a large prize by not cheating than for those who gave up only a small prize.

Dissonance Resulting from Effort

If an individual is in a situation in which he continues to expend effort in order to reach some goal, yet does not reach it, he will experience dissonance. His cognition that he is expending effort would be dissonant with his cognition that he is unrewarded. One way in which he could reduce dissonance would be by finding something about the situation to which he could attach value. Thus, an unsuccessful prospector might reduce dissonance by marveling at the magnificent beauty of the surrounding terrain; an unsuccessful fisherman might do so by boasting of the beautiful tan he received while wading through the streams or by becoming enamored of the skill involved in casting.

Aronson (2) tested these implications of the theory of dissonance in the laboratory. His subjects were given a task to perform in order to obtain rewards. Each subject was rewarded on about one-third of the trials. For some subjects the task was almost effortless while for others it involved considerable expenditures of effort and energy. For all subjects, the stimuli terminating a trial were different on rewarded trials from what they were on unrewarded trials. Specifically, on each trial the subject obtained a container. On rewarded trials the containers were red and contained money. On unrewarded trials the containers were green and empty. The subjects were asked to rate the relative attractiveness of the two colors both before and after the experiment.

The prediction was that, in the *Effortful* condition, the unrewarded color would become relatively more attractive than in the *Easy* condition. According to the theory, in the *Effortful* condition, each time the subject pulled out an unrewarded container, his cognition that the container was empty would be dissonant with his cognition that he exerted effort to obtain it. It was predicted that in order to reduce dissonance, the subject would attach value to the unrewarded color. In this way, he could justify the expenditure of effort by convincing himself that the sight of the color was worth working for even though it contained no money. In the *Easy* condition, since very little effort was expended, very little dissonance was created. Hence, one would expect no tendency to attach positive value to the unrewarded color.

The results are in line with the theoretical expectations. The *Easy* condition, where little or no dissonance was introduced on unrewarded trials, provides a baseline from which shifts in color preference may be evaluated. It happens that in the *Easy* condition there is a marked shift of preference toward the *rewarded* color. In the *Effortful* condition, where dissonance was present on nonrewarded trials, the effects of dissonance reduction counterbalance this other effect. A large and clear difference

is obtained between the Dissonance (Effortful) condition and the No Dissonance (Easy) condition in the relative preference of the two colors.

Dissonance Introduced by a Fait Accompli

Very often persons find themselves in a position where they must endure some unpleasant situation. The cognition a person has that the situation is or will be unpleasant is dissonant with his cognition that he must endure it. One way in which he can reduce this dissonance is by convincing himself that the situation is not as unpleasant as it first appeared. Brehm (6) induced eighth-grade children to eat a disliked vegetable (in school) by offering them a small reward. While eating, the children in the *experimental* condition were told that their parents would be informed which vegetable they had eaten; this strongly implied that they would be expected to eat more of this vegetable at home. The children in the *control* condition were told nothing. All of the subjects were asked to rate their liking for the vegetable both before and after the experiment. Those subjects who were led to anticipate that they would be eating more of the vegetable at home showed a significantly greater increase in their rated fondness for the vegetable than did the subjects in the *control* condition.

In the preceding several pages we have presented an extremely brief statement concerning the theory of dissonance and a few scattered illustrations of experimental studies on the reduction of dissonance in a variety of contexts. The theoretical statement is not intended as a complete, formal presentation nor are the studies discussed intended to be an adequate coverage of the relevant empirical data. The purpose was, rather, to present as briefly as possible some overall understanding of the theory of dissonance, the kinds of situations which arouse dissonance and the kinds of effects one may anticipate as a result of dissonance reduction.

It has been illustrated by our previous discussion that an individual can experience and reduce dissonance strictly as a result of his own actions. Other people need not be involved in the process. But an individual's interactions with other people may, in itself, be a source of dissonance. Moreover, an individual may utilize his interactions with other people as a means of reducing dissonance. In the following two sections we will discuss, and introduce more empirical data concerning the arousal and reduction of dissonance in situations which are primarily social. It should be emphasized, however, that the social context does not introduce anything qualitatively different into the processes of arousal and reduction of dissonance. Sometimes a social context introduces greater complexities; sometimes a social context makes it more difficult or even impossible for a person to avoid the introduction of dissonance into his

cognitions; and sometimes a social context can make it spectacularly easy to reduce dissonance.

These latter aspects of dissonance arousal and reduction in social contexts are, of course, the ones that will be stressed in the following pages. The reader will, however, note the conceptual similarity between the experiments we have discussed in the preceding pages and the ones we will discuss in the remainder of this chapter.

Group Interaction as a Source of Dissonance

Dissonance Arising from Faulty Anticipation of Social Environment

An individual does not usually have good control over his social environment. One way in which this manifests itself is in his partial inability to predict the nature of the groups to which he exposes himself. For example, a person might go out on a blind date, join a club, or accept an invitation to a cocktail party, only to find the people to be less pleasant than he had anticipated. If he had not expended any time or effort in exposing himself to the group, he would experience little or no dissonance. But if he had invested a great deal in order to interact with these people —e.g., if he had driven fifty miles to pick up his date, or paid a huge admission fee to join the club, or neglected preparing for an exam to go to the cocktail party—he would experience dissonance. His cognitions concerning his investment of time and effort would be dissonant with his cognitions concerning the negative aspects of the group.

There are at least two ways that a person could reduce dissonance in such a situation: (*a*) He could undervalue the amount of his investment, that is, convince himself that the effort or expense was really negligible; or (*b*) he could overvalue the group by emphasizing its positive aspects and blinding himself to its negative aspects.

This kind of situation was simulated in a laboratory experiment by Aronson and Mills (3). In this experiment, college women volunteered to join a group for the purpose of participating in a series of discussions on the psychology of sex. The subjects were randomly assigned to one of three experimental conditions: a *severe initiation* condition, a *mild initiation* condition, and a *no initiation* condition. In the *severe* and *mild initiation* conditions each subject was told that, in order to gain admission to the group, she would be required to demonstrate that she was sophisticated enough to participate freely and frankly in a sexually oriented discussion. An "embarrassment test" was then administered in which the subject read aloud some sexually oriented material in the presence of the male experimenter. The experimenter explained that he would judge from her performance whether or not she qualified for

admission to the group. In the *severe initiation* condition the "embarrassment test" consisted of the reciting of a number of obscene words plus some lurid sexual passages from contemporary novels. In the *mild initiation* condition the subjects were simply required to recite a short list of rather genteel sexually oriented words. In the *no initiation* condition the subject was allowed to enter the group without going through any initiation.

Each of the subjects then listened to the same tape recording of a group discussion which she believed was a live discussion being conducted by the group she had just joined. The recording was a rather dull, banal, and irrelevant discussion of the secondary sex behavior of lower animals. The participants spoke haltingly, inarticulately and unenthusiastically. Immediately after listening to the tape recording, each subject was asked to rate the discussion and the group members on several evaluative scales; e.g., dull-interesting, intelligent-unintelligent, etc.

The experimenters reasoned that, in the *severe initiation* condition, the subjects would experience dissonance; their cognition that they had undergone an extremely embarrassing experience to become a member of a group would be dissonant with their cognitions concerning the negative aspects of the group. They could reduce the dissonance by distorting their perceptions of the discussion in a positive direction. In the *no initiation* and *mild initiation* conditions, however, the subjects made relatively little investment in order to enter the group and hence, would not be expected to experience much dissonance. It was expected, then, that the subjects in the *severe initiation* condition would rate the group as being more attractive than the subjects in either the *mild* or *no initiation* conditions. The results strongly supported the prediction. The subjects in the *no initiation* and *mild initiation* conditions were generally unimpressed by the discussion. Those in the *severe initiation* condition, however, felt that the discussion was quite interesting and intelligent. They also liked the other group members better.

Dissonance Aroused by Disagreement with Others

When a person is confronted with an opinion contrary to his own which is held by people like himself, he experiences dissonance. The cognitions corresponding to his own opinions are dissonant with the cognition that these other persons hold differing opinions. It is almost impossible to avoid the introduction of such dissonance unless one altogether avoids any social interaction. One may be very attracted to a person or group of people because of shared interests and even shared opinions. But inevitably there will be some disagreement on matters of concern to the person.

There is considerable evidence from laboratory experimentation that the magnitude of the dissonance thus introduced will depend upon: (*a*) The importance of the person or group that voices the disagreement (4, 9); and (*b*) on the importance and relevance to the individual of the issue concerning which the disagreement exists (17). There is also considerable evidence concerning the ways in which a person will attempt to reduce such dissonance. In general, he may attempt to convince himself that the content area in which the disagreement exists is relatively unimportant; he may attempt to derogate the person or group that disagrees with him; he may attempt to eliminate the disagreement either by changing his own opinion or attempting to influence the disagreeing persons to change theirs; or he may seek additional social support for the opinion he holds, thus, in essence, adding new cognitions which are consonant with his own opinions.

There are two major theoretical questions in this area about which there has not been much experimental evidence until recently. One question concerns the relation between the extent of disagreement and the magnitude of dissonance resulting from the disagreement. The other question concerns the conditions under which the dissonance will be reduced primarily by derogating the person who disagrees or primarily by attempting to lessen or eliminate the disagreement. We will discuss these two questions together, because, as will be seen, they are intertwined.

On purely theoretical grounds one would expect the magnitude of dissonance to increase as the extent of disagreement from someone else increases. Let us, for example, consider a person who believes that milk is very good for adults and everyone should drink at least one quart of milk a day. Let us suppose that he discovered that a friend of his believed that milk is poisonously harmful to adults and they should never drink milk. This would introduce more dissonance than if this friend only believed that one quart a day was too much and might be harmful and that, hence, adults should only drink one or two glasses of milk a day. If greater extent of disagreement implies greater magnitude of dissonance, then one should observe more attempts at dissonance reduction as extent of disagreement increases. Since opinion change is one means of reducing dissonance, one would expect that the more the extent of disagreement, the greater would be the ensuing opinion change.

Experimental work on the relation between extent of disagreement and amount of opinion change has not, however, yielded very consistent results (14, 15). Sometimes greater disagreement seems to result in more opinion change and sometimes in less opinion change. There are two possible explanations for these variable findings. It is possible that, if the disagreement is too extreme, that is, outside of the range that the person

regards as a reasonable position, the dissonance introduced is rather negligible. Another possible explanation is that, as the extent of disagreement increases, the tendency to reduce dissonance primarily by derogating the disagreeing person also increases. If this were true, then an experiment which only measured opinion change and did not control the ease with which the disagreeing person could be derogated, might indeed be expected to show variable effects since these two are alternative methods of reducing dissonance.

Zimbardo (18) performed an experiment designed to yield results which would help choose between these two possible interpretations. In his study he attempted to minimize the possible use of derogation of the disagreeing person to reduce dissonance by always having the disagreement come from a very close friend. Eighty college women privately gave their opinion regarding the locus of blame in a hypothetical juvenile delinquency problem. Each of the subjects was then confronted with the alleged opinion of a close friend with whom she had been simultaneously exposed to the problem. After a short lapse of time, each subject was asked to state her opinion again.

Two variables were manipulated—the degree of involvement in the problem and the degree of the discrepancy of opinion. One half of the subjects were told that their opinion in the case was extremely important since it provided a good index of their personality, etc., . . . (high involvement). The other half of the subjects were told that their opinion in the case was inconsequential (low involvement). At the same time, one half of the subjects were led to believe that the opinion of their friend was extremely discrepant from their own while one half of the subjects were led to believe that it was only slightly discrepant from their own. "Extremely discrepant" in this study was defined as being in a range which the subject had previously indicated was unreasonable and indefensible.

On the assumption that derogation of a close friend would not occur, change in opinion was used as an index of dissonance reduction. The results showed that (*a*) the more involved a subject was, the more she tended to shift her opinion in the direction of that of her friend; (*b*) the greater the discrepancy between a subject's opinion and her friend's opinion, the more she tended to shift her opinion in the direction of that of her friend.

In short, the experiment by Zimbardo presents clear evidence that the magnitude of dissonance introduced by disagreement from another person does increase as the extent of the disagreement increases, even where the disagreeing person voices an opinion outside of the range that the person considers acceptable and reasonable. If alternative methods of dissonance reduction such as derogating the source of the disagree-

ment are ruled out, then the effects of the greater magnitude of dissonance can be measured by opinion change.

One more point remains to be demonstrated in order to strengthen this interpretation. It is necessary to show that, if derogation of the source of the disagreement is not ruled out as a possibility, then such derogation becomes increasingly preferred as a means of dissonance reduction as the extent of disagreement increases. Unfortunately, no controlled experimental studies exist on this point. There is relevant evidence, however, from a field study by Adams, *et al.* (1) in which the tendency to derogate the disagreer and the tendency to change one's attitudes in the direction of the disagreer were studied simultaneously as alternative manifestations of increased dissonance. In this study, married women were interviewed regarding their attitudes on the proper time to begin toilet training. Two weeks later, the interviewers returned and asked each subject to read a short and rather credible booklet which strongly advocated that training should not begin until the child is twenty-four months old. The subjects were then immediately reinterviewed regarding their attitudes toward toilet training and their opinion of the booklet. The experimenters compared the responses of subjects whose views were widely discrepant from those advocated in the pamphlet with the responses of subjects whose views were close to those advocated by the pamphlet.

The results show rather clearly the simultaneous operation of the two avenues of dissonance reduction. Those for whom the pamphlet did not introduce much dissonance tend not to derogate it. Only 19% of these people say that it was unfair, biased or the like. The comparable figure for those in whom the pamphlet introduced considerable dissonance is 59%. Certainly, the tendency to derogate the communication increased as the magnitude of dissonance increased. Furthermore, there are relatively few instances of opinion change among those who derogate the pamphlet. Among those who do not derogate the pamphlet, however, there is considerable opinion change and the amount of opinion change increases as the magnitude of dissonance increases. This latter point, of course, confirms the finding from the Zimbardo experiment.

Dissonance Resulting from Forced Public Compliance

There are many circumstances under which a group will force a person to behave overtly in a manner contrary to his beliefs. When this occurs, the person experiences dissonance. His cognition that he performed the overt act would be dissonant with his opinions and beliefs. One way in which a person could reduce dissonance would be by changing his beliefs to bring them more in line with his overt behavior.

Under what conditions will such dissonance be maximal? Suppose a

great deal of force is brought to bear in order to induce a person to make a public statement which is contrary to his private opinion; e.g., suppose he is offered a great reward if he makes the statement. The size of the reward serves as a justification for making the statement. That is, his cognition that he will receive a great reward for making the public statement is consonant with his cognition that he made the statement. The greater the reward the greater the consonance, and hence, the less the over-all dissonance. Conversely, if a person makes a public statement which is dissonant with his beliefs in order to receive a small reward, there is little justification for having made the statement. Since there is little consonance between making the statement and receiving a small reward, the over-all dissonance will be greater. Thus, dissonance theory leads to the following prediction: If a person makes a public statement which he does not believe to be true, in order to receive a small reward, he will change his private belief in the direction of the public statement; increasing the size of the reward will decrease the degree to which he will change his private opinion.

This prediction was tested in a study by Festinger and Carlsmith (11). In this experiment, subjects performed a series of extremely boring and tedious tasks for one hour. After they had finished the tasks, the experimenter falsely "explained the purpose of the experiment." The subjects were told that the purpose of the experiment was to see whether people perform better if they are told beforehand that the tasks are interesting and enjoyable than if they are not told anything. Each subject was told that he was in the control condition; that is, he had not been told anything ahead of time about the tasks. The experimenter explained that in the experimental condition, an accomplice poses as a subject who has just finished the experiment, and tells the waiting subject that the task was a lot of fun. The experimenter then appeared very uncomfortable and explained to the subject that a girl was now waiting to be tested and the accomplice had not shown up yet. He then asked the subject if he would do him a favor and substitute for the accomplice and tell the waiting subject that the tasks are interesting and fun. He offered to pay the subject for doing this and for serving as a substitute accomplice in case of future emergencies.

The subjects were run in one of three conditions: (*a*) a $1 condition, in which the subjects were paid $1 for serving as an accomplice; (*b*) a $20 condition, in which the subjects were paid $20 for the same job; and (*c*) a control condition in which the subjects were not asked to lie to the waiting subject.

Each subject was then interviewed (by a different experimenter) and was asked to rate how enjoyable the tasks were. The results supported the predictions made from the theory. In the control condition and the $20

condition, the subjects felt the tasks were rather unenjoyable; there was no difference between the ratings made by the subjects in these two conditions. In the $1 condition, however, the subjects rated the tasks as rather enjoyable. The ratings of the tasks by the subjects in the $1 condition were significantly more positive than those in either the $20 condition or the control condition. In short, forcing a person to make a public statement which was contrary to his private belief introduced considerable dissonance when the reward offered for making the public statement was small. Under these circumstances the person reduces dissonance by changing his private opinion so as to lessen the discrepancy between what he privately believes and what he has publicly said. If too much force is applied to elicit the overt behavior, the dissonance aroused is correspondingly less and private change of opinion does not occur.

We have tried to illustrate in the preceding section some of the variety of ways in which groups and other persons arouse dissonance in an individual and the ways in which such dissonance tends to be reduced. We have given three examples: namely, (*a*) dissonance introduced by the behavior of others in providing or not providing satisfactions for the individual; (*b*) dissonance introduced by the expression of disagreement; and (*c*) dissonance introduced when others force an individual to behave in manners contrary to his private beliefs. Interaction with other people and membership in groups are not, however, only potentially dissonance arousing. There is also another side to the coin. Other people and groups can be and are used as a very effective means of reducing dissonance which has been introduced in some way. We will proceed, in the next section, to a discussion of this aspect of interaction with other people.

Group Interaction as a Means of Reducing Dissonance

When a person experiences dissonance, he can use his interactions with other people as a means of reducing the dissonance. In general, there are two processes involved here:

1. He can reduce dissonance by obtaining support from people who already believe what he wants to persuade himself about.

2. He can reduce dissonance by persuading others that they too should believe what he wants to persuade himself about.

Individuals can and do employ both of these methods simultaneously. But something can also be said concerning the conditions under which one or the other will be used primarily. If a person's cognitions regarding an opinion are largely consonant before he is confronted with someone who disagrees with him, this disagreer is the main source of dissonance. In this situation, one would expect that an individual would attempt to

reduce the dissonance by trying to convince the other person to change his opinion. On the other hand, if a person has been exposed to a great deal of evidence contrary to an opinion he holds and he is then confronted with someone who disagrees, his cognition that the other person disagrees with him adds relatively little to his total dissonance. He might attempt to induce the disagreer to change his mind; but since the disagreer is not the major source of dissonance, influencing him would accomplish relatively little. This person is more likely to seek social support from persons who hold the same opinion he does. Persons who agree with him will very likely help reduce his dissonance by providing new information and new arguments consonant with his opinion and by discrediting arguments which are dissonant with the opinion.

This distinction can be illustrated by comparing two experiments. In an experiment by Festinger and Thibaut (13) small groups of college students were presented with a problem to discuss. The problem was especially selected so as to elicit a wide range of opinions. Each of the members of the group was asked to state his opinion regarding the best solution to the problem. This was done by marking a point on a seven-point scale which represented the range of possible solutions. The scale rating of each person's opinion was placed on a white card in front of him in plain view of all of the other members of the group. The subjects were then allowed to discuss the problem by writing notes to one another for twenty minutes. Each note that a subject wrote could be sent to only one person.

What would one expect concerning the pattern of communication in such a situation? After having formed an opinion, each person of course, discovered that several people in the group disagreed with him. This introduced dissonance regarding his opinion; the more extreme the disagreement the greater was the dissonance. One would expect that each person should direct the majority of his communications to the group members who disagree with him most. Furthermore, one would expect these communications to be mainly attempts to persuade the other person to change his opinion. The results are quite consistent with this line of reasoning. The notes that were written were almost exclusively attempts to persuade others and from 70% to 90% of all notes were addressed to members who held extreme opinions.

In contrast, let us examine the situation which was created in an experiment by Brodbeck (8). Groups of subjects were brought together and each subject was asked to indicate his opinion, privately, regarding the use of wire tapping by law enforcement officers. This issue was used because there was considerable spread of opinion concerning it. They were also asked to rate how confident they were of their opinion. The subjects then listened to an authoritative speech on the issue. For one

half of the groups, the speech was a strong argument in favor of wire tapping while for the other half of the groups the speech was a strong argument against wire tapping. Thus, some subjects in each group were exposed to a persuasive communication which was in disagreement with their previously stated belief while other subjects in each group were exposed to a persuasive communication which supported their previously stated belief. After listening to the speech, each subject was asked, once again, to indicate whether he was for or against wire tapping and how confident he was of his opinion.

On the basis of the procedure thus far, the subjects could be divided into three classes: (*a*) *Consonant subjects;* those subjects whose initial opinions were supported by the communication. (*b*) *Strongly dissonant subjects;* those for whom the disagreeing speech had sufficient impact so that they lowered the confidence they had in their initial opinion. (*c*) *Mildly dissonant subjects;* those whose opinions disagreed with the communication but who did *not* lower the confidence they had in their initial opinions.

In the second session of the experiment, four *consonant* subjects and four *dissonant* subjects were selected from each group so that in each of these second session groups there were four persons in favor of and four opposed to wire tapping. They were placed in a room, each sitting behind a clearly visible placard which stated his opinion. The experimenter then informed them that the group was going to split up into pairs to discuss the issue and asked them to list the two persons with whom they would most like to discuss the issue. The *strongly dissonant* subjects more frequently wanted to discuss the matter with persons who agreed with them than did the *consonant* subjects. These results can be interpreted as indicating that the *consonant* subjects wanted to reduce what little dissonance they felt by converting those people who introduced the dissonance; i.e., those people who disagreed with them. They had little need to discuss the issue with individuals who held the same opinion. For the *strongly dissonant* subjects, however, the presence of people who disagreed with them was a relatively minor source of dissonance. Their primary source of dissonance was introduced by the communication. By discussing their opinions with persons who agreed with them they were more likely to gain the information and support needed to reduce this dissonance. The *mildly dissonant* subjects yielded results between the other two classes of subjects.

There are additional data from the Brodbeck experiment to support the interpretation offered above; namely, the *strongly dissonant* subjects wanted social support from those who agreed with them in order to reduce the dissonance introduced by the persuasive communication. The second session group of eight subjects did not split up into pairs but

actually proceeded to discuss the issue in the total group. After this discussion, they were once more asked to state their opinion on the issue and the confidence they had in this opinion.

It should be stressed again that in the group which carried on the discussion there were four persons on each side of the issue. It is interesting to note, therefore that, following this discussion, the *strongly dissonant* subjects had, on the average, completely regained the confidence in their initial opinion which they had before having listened to the dissonance introducing speech. In other words, these subjects indicated, by their choice of the persons with whom they wanted to discuss the issue, that they wanted support for their shaken opinions. They then proceeded to obtain such support and regained their confidence even in a situation where half the members of the group disagreed with them. Clearly, they either listened more carefully or gave more weight to the arguments advanced in the discussion by those that agreed with them.

This kind of phenomenon can be seen more clearly and dramatically, as one might expect, in real life situations. An example of this may be taken from a study by Festinger, Riecken, and Schachter (12). The study involved the systematic observation of the behavior of a group of people who firmly believed that the world would end by a cataclysm on a certain date and, in many ways, had committed themselves heavily to this belief.

The investigators were concerned with the effects on these people when their prophecy failed to be confirmed. The cognitions concerning the tremendous sacrifices they had made for their beliefs would be dissonant with their cognition that their beliefs were wrong. They could reduce this dissonance by convincing themselves that their beliefs were correct in spite of the fact that their specific prophecy was disconfirmed. They might accomplish this in at least two ways:

1. *By receiving social support from one another.* That is, by finding an explanation for the disconfirmation and convincing one another that it is a valid one.

2. *By proselyting other people.* By convincing outsiders that their beliefs are valid, they could add cognitions consonant with maintaining their beliefs and remaining in the movement.

On the night of the expected cataclysm, most of the believers gathered at a member's home where they were to await a flying saucer which was to rescue them at midnight. Several of the members, however, were instructed to wait by themselves at their own homes. When midnight came and passed, the group was overwhelmingly disappointed. They could not at first believe that their prophecy had not been fulfilled. When they finally grew to realize that the cataclysm would not be forthcoming they struggled to find a reason why. For several hours the believers kept assuring one another of the validity of their movement and they kept in-

sisting to one another that an explanation would be forthcoming. Finally, they put forth the explanation that the earth was not destroyed precisely because of their belief and their faith. The group was able to accept and believe this explanation because they could support one another and convince each other that this was, in fact, a valid explanation. Although their belief was momentarily shaken by the disconfirmation, the members were able to maintain their membership in the movement because of the mutual social support which they received. Furthermore, the conviction of the members who had waited together did not show any signs of faltering several weeks after the disconfirmation (when the study was concluded). In fact, so powerful was the increased social support that two of the members who had occasionally expressed mild skepticism about a few tenets of the movement, now firmly believed all of them. The importance of the social support in reducing dissonance, moreover, is shown by the contrast provided by those members of the movement, who had waited for the fulfillment of the prophecy alone in their own homes. These persons did not maintain their beliefs. Without the continuous social support of their fellow members, the dissonance created by the disconfirmation was sufficient to cause them to renounce their belief in the movement in spite of their heavy commitment to it.

Perhaps even a more striking aspect of the effects of disconfirmation involved the proselyting behavior of the believers who remained believers. Prior to the disconfirmation, attempts on the part of the believers at convincing people of the validity of their movement were rather mild. For months before the disconfirmation they seemed to have little desire to attract new believers. They felt that those who had been chosen to be saved would join the group of their own accord. Hence, all visitors who expressed interest in the movement were treated casually; no attempt was made to sell the movement to them and very little information about the movement was given to them. There were even periods when the members were specifically instructed not to speak to outsiders. No attempt was made to attract publicity. On the contrary, all attempts on the part of the press to obtain interviews were rebuffed.

Immediately after the disconfirmation, the behavior of the believers changed dramatically. On four successive days they called press conferences, gave lengthy interviews and posed for pictures. They also attempted to attract new members. They invited the public and press to attend a meeting at which they sang songs while awaiting the appearance of a spaceman "who might come."

In summary, the believers, by engaging in mutual social support and proselyting new members, were able to reduce dissonance sufficiently to enable themselves to maintain their beliefs. Those members of the group

who had been cut off from social support at the crucial time were unable to maintain these beliefs following the failure of the prophecy.

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13

Reference Groups, Membership Groups, and Attitude Change [1]

Alberta Engvall Siegel and Sidney Siegel

In social psychological theory, it has long been recognized that an individual's *membership groups* have an important influence on the values and attitudes he holds. More recently, attention has also been given to the influence of his *reference groups:* the groups in which he aspires to attain or maintain membership. In a given area, membership groups and reference groups may or may not be identical. They are identical when the person aspires to *maintain* membership in the group of which he is a part; they are disparate when the group in which the individual aspires to *attain* membership is one in which he is not a member. It has been widely asserted that both membership and reference groups affect the attitudes held by the individual (4).

The present study is an examination of the attitude changes which occur over time when reference groups and membership groups are identical and when they are disparate. The study takes advantage of a field experiment which occurred in the social context of the lives of the subjects, concerning events considered vital by them. The subjects were not aware that their membership and reference groups were of research interest; in fact, they did not know that the relevant information about these was available to the investigators.

The field experiment permitted a test of the general hypothesis that both the amount and the direction of a person's attitude change over time depends on the attitude norms of his membership group (whether or not that group is chosen by him) and on the attitude norms of his reference group.

This hypothesis is tested with subjects who shared a common reference group at the time of the initial assessment of attitudes. They were then

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randomly assigned to alternative membership groups, some being assigned to the chosen group and others to a nonchosen group. Attitudes were reassessed after a year of experience in these alternative membership groups with divergent attitude norms. During the course of the year, some subjects came to take the imposed (initially nonpreferred) membership group as their reference group. Attitude change after the year was examined in terms of the membership group and reference group identifications of the subjects at that time.

The Field Experiment

The subjects of this study were women students at a large private coeducational university. The study was initiated shortly before the end of their freshman year, when they all lived in the same large freshman dormitory to which they had been assigned upon entering the university. At this university, all women move to new housing for their sophomore year. Several types of housing are available to them: a large dormitory, a medium-sized dormitory, several very small houses which share common dining facilities, and a number of former sorority houses which have been operated by the university since sororities were banished from the campus. These latter are located among the fraternity houses on Fraternity Row, and are therefore known as "Row houses." Although the Row houses are lower in physical comfort than most of the other residences for women, students consider them higher in social status. This observation was confirmed by a poll of students (5, 205), in which over 90 per cent of the respondents stated that Row houses for women were higher in social status than non-Row houses, the remaining few disclaiming any information concerning status differences among women's residences.

In the Spring of each year, a "drawing" is held for housing for the subsequent year. All freshmen must participate in this drawing, and any other student who wishes to change her residence may participate. It is conducted by the office of the Dean of Women, in cooperation with woman student leaders. Any participant's ballot is understood to be secret. The woman uses the ballot to rank the houses in the order of her preference. After submitting this ballot, she draws a number from the hopper. The rank of that number determines the likelihood that her preference will be satisfied.

In research reported earlier (5), a random sample was drawn from the population of freshman women at this university, several tests were administered to the persons in that sample, and (unknown to the subjects) their housing preferences for the forthcoming sophomore year were observed by the investigator. The subjects were characterized as "high status

oriented" if they listed a Row house as their first choice, and were characterized as "low status oriented" if they listed a non-Row house as their first choice. The hypothesis under test, drawn from reference group theory and from theoretical formulations concerning authoritarianism, was that high status orientation is a correlate of authoritarianism. The hypothesis was confirmed: freshman women who listed a Row house as their first choice for residence scored significantly higher on the average in authoritarianism, as measured by the E-F scale (1, 2) than did women who listed a non-Row house as their first choice. The present study is a continuation of the one described, and uses as its subjects only those members of the original sample who were "high status oriented," i.e., preferred to live in a Row house for the sophomore year. In the initial study (5), of the 95 subjects whose housing choices were listed, 39 were "high status oriented," i.e., demonstrated that the Row was their reference group by giving a Row house as their first choice in the drawing. Of this group, 28 were available to serve as subjects for the follow-up or "change" study which is the topic of the present paper. These women form a homogeneous subsample in that at the conclusion of their freshman year they shared a common membership group (the freshman dormitory) and a common reference group (the Row). These subjects, however, had divergent experiences during their sophomore year: nine were Row residents during that year (having drawn sufficiently small numbers in the housing drawing to enable them to be assigned to the group of their choice) and the other 19 lived in non-Row houses during that year (having drawn numbers too large to enable them to be assigned to the housing group of their choice).

E-F scores were obtained from each of the 28 subjects in the course of a large-scale testing program administered to most of the women students at the university. Anonymity was guaranteed to the participants, but a coding procedure permitted the investigators to identify each respondent and thereby to isolate the subjects and compare each subjects' second E-F score with her first.

To prevent the women from knowing that they were participating in a follow-up study, several procedures were utilized: (*a*) many persons who had not served in the earlier study were included in the second sample, (*b*) the testing was introduced as being part of a nation-wide study to establish norms, (*c*) the test administrators were different persons from those who had administered the initial tests, (*d*) persons who informed the test administrator that they had already taken the "Public Opinion Questionnaire" (E-F scale) were casually told that this did not disqualify them from participating in the current study.

The women had no hint that the research was in any way related to their housing arrangements. Testing was conducted in classrooms as well

as in residences, and all procedures and instructions were specifically designed to avoid any arousal of the salience of the housing groups in the frame of reference of the research.

The annual housing drawing was conducted three weeks after the sophomore-year testing, and, as usual, each woman's housing ballot was understood to be secret. In this drawing, each subject had the opportunity to change her membership group, although a residence move is not required at the end of the sophomore year as it is at the end of the freshman year. If a subject participated in this drawing, the house which she listed as her first choice on the ballot was identified by the investigators as her reference group. If she did not, it was evident that the house in which she was currently a member was the one in which she chose to continue to live, i.e., was her reference group. With the information on each participant's residence choice at the end of her freshman year, her assigned residence for her sophomore year, and her residence choice at the end of her sophomore year, it was possible to classify the subjects in three categories:

A. Women ($n = 9$) who had gained assignment to live on the Row during their sophomore year and who did not attempt to draw out of the Row at the end of that year;
B. Women ($n = 11$) who had not gained assignment to a Row house for the sophomore year and who drew for a Row house again after living in a non-Row house during the sophomore year; and
C. Women ($n = 8$) who had not gained assignment to a Row house for the sophomore year, and who chose to remain in a non-Row house after living in one during the sophomore year.

For all three groups of subjects, as we have pointed out, membership group (freshman dormitory) and reference group (Row house) were common at the end of the freshman year. For Group A, membership and reference groups were identical throughout the sophomore year. For Group B, membership and reference groups were disparate throughout the sophomore year. For Group C, membership and reference groups were initially disparate during the sophomore year but became identical because of a change in reference groups.

As will be demonstrated, the Row and the non-Row social groups differ in attitude norms, with Row residents being generally more authoritarian than non-Row residents. From social psychological theory concerning the influence of group norms on individuals' attitudes, it would be predicted that the different group identifications during the sophomore year of the three groups of subjects would result in differential attitude change. Those who gained admittance to a Row house for the sophomore year (Group A) would be expected to show the least change in authoritarianism, for they spent that year in a social context which

reinforced their initial attitudes. Group C members would be expected to show the greatest change in authoritarianism, a change associated not only with their membership in a group (the non-Row group) which is typically low in authoritarianism, but also with their shift in reference groups, from Row to non-Row, i.e., from a group normatively higher in authoritarianism to a group normatively lower. The extent of attitude change in the members of Group B would be expected to be intermediate, due to the conflicting influences of the imposed membership group (non-Row) and of the unchanged reference group (Row). The research hypothesis, then, is that between the time of the freshman-year testing and the sophomore-year testing, the extent of change in authoritarianism will be least in Group A, greater in Group B, and greatest in Group C. That is, in extent of attitude change, Group A < Group B < Group C.

Results

Group norms. From the data collected in the large-scale testing program, it was possible to determine the group norms for authoritarian attitudes among the Row and the non-Row women at the university. The

TABLE 1

FREQUENCIES OF E-F SCORES ABOVE AND BELOW COMMON MEDIAN FOR ROW AND NON-ROW RESIDENTS

	RESIDENTS OF NON-ROW HOUSES	RESIDENTS OF ROW HOUSES	TOTAL
Above Median	36	166	202
Below Median	65	137	202
Total	101	303	404

E-F scale was administered to all available Row residents ($n = 303$) and to a random sample of residents of non-Row houses ($n = 101$). These women were sophomores, juniors, and seniors. The mean E-F score of the Row women was 90, while the mean E-F score of the non-Row was 81. The E-F scores of the two groups were demonstrated to differ at the $p < .001$ level ($\chi^2 = 11.1$) by the median test (6, 111–116), a non-parametric test, the data for which are shown in Table 1.

Attitude change. The central hypothesis of this study is that attitude change will occur differentially in Groups A, B, and C, and that it will occur in the direction which would be predicted from knowledge of the group norms among Row and non-Row residents in general. The 28 subjects of this study had a mean E-F score of 102 at the end of their fresh-

man year. The data reported above concerning authoritarianism norms for all women residing on campus would lead to the prediction that in general the subjects would show a reduction in authoritarianism during the sophomore year but that this reduction would be differential in the three groups; from the knowledge that Row residents generally are higher in authoritarianism than non-Row residents, the prediction based on social group theory would be that Group A would show the smallest reduction in authoritarianism scores, Group B would show a larger reduction, and Group C would show the largest reduction. The data which permit a test of this hypothesis are given in Table 2. The Jonck-

TABLE 2

FRESHMAN-YEAR AND SOPHOMORE-YEAR E-F SCORES OF SUBJECTS

GROUP	E-F SCORE		DIFFERENCE
	End of Freshman Year	End of Sophomore Year	
A	108	125	−17
	70	78	−8
	106	107	−1
	92	92	0
	80	78	2
	104	102	2
	143	138	5
	110	92	18
	114	80	34
B	76	117	−41
	105	107	−2
	88	82	6
	109	97	12
	98	83	15
	112	94	18
	101	82	19
	114	93	21
	104	81	23
	116	91	25
	101	74	27
C	121	126	−5
	87	79	8
	105	95	10
	97	81	16
	96	78	18
	108	73	35
	114	77	37
	88	49	39

heere test (3), a nonparametric k-sample test which tests the null hypothesis that the three groups are from the same population against the alternative hypothesis that they are from different populations which are ordered in a specified way, was used with these data. By that test, the hypothesis is confirmed at the $p < .025$ level.

Discussion

Substantively, the present study provides experimental verification of certain assertions in social group theory, demonstrating that attitude change over time is related to the group identification of the person—both his membership group identification and his reference group identification. The hypothesis that extent of attitude change would be different in the three subgroups of subjects, depending on their respective membership group and reference group identifications, is confirmed at the $p < .025$ level; in extent of change in authoritarianism, Group A < Group B < Group C, as predicted.

Another way of looking at the data may serve to highlight the influence of membership groups and reference groups. At the end of the freshman year, the members of Groups A, B, and C shared the same membership group and the same reference group. During the sophomore year, those in Group A shared one membership group while those in Groups B and C together shared another. From membership group theory, it would be predicted that the extent of attitude change would be greater among the latter subjects. This hypothesis is supported by the data (in Table 2): by the Mann-Whitney test (6, 116–127), the change scores of these two sets of subjects (Group A versus Groups B and C together) differ in the predicted direction at the $p < .025$ level. This finding illustrates the influence of *membership* groups on attitude change. On the other hand, at the conclusion of the sophomore year, the women in Groups A and B shared a common reference group while those in Group C had come to share another. From reference group theory, it would be predicted that attitude change would be more extensive among the subjects who had changed reference groups (Group C) than among those who had not. This hypothesis is also supported by the data (in Table 2): by the Mann-Whitney test, the change scores of these two sets of subjects (Groups A and B together versus Group C) differ in the predicted direction at the $p < .05$ level. This finding illustrates the influence of *reference* groups on attitude change. Any inference from this mode of analysis (as contrasted with the main analysis of the data, by the Jonckheere test) must be qualified because of the nonindependence of the data on which the two Mann-Whitney tests are made, but it is men-

tioned here to clarify the role which membership and reference groups play in influencing attitude change.

The findings may also contribute to our understanding of processes affecting attitude change. The imposition of a membership group does have some effect on an individual's attitudes, even when the imposed group is not accepted by the individual as his reference group. This relationship is shown in the case of Group B. If the person comes to accept the imposed group as his reference group, as was the case with the persons in Group C, then the change in his attitudes toward the level of the group norm is even more pronounced.

Methodologically, the study has certain features which may deserve brief mention. First, the study demonstrates that it is possible operationally to define the concept of reference group. The act of voting by secret ballot for the group in which one would like to live constitutes clear behavioral specification of one's reference group, and it is an act whose conceptual meaning can be so directly inferred that there is no problem of reliability of judgment in its categorization by the investigator. Second, the study demonstrates that a field study can be conducted which contains the critical feature of an experiment that is usually lacking in naturalistic situations: randomization. The determination of whether or not a woman student would be assigned to the living group of her choice was based on a random event: the size of the number she drew from the hopper. This fact satisfied the requirement that the treatment condition be randomized, and permitted sharper inferences than can usually be drawn from field studies. Third, the test behavior on which the conclusions of this study were based occurred in a context in which the salience of membership and reference groups was *not* aroused and in which no external sanctions from the relevant groups were operative. This feature of the design permitted the interpretation that the E-F scores represented the participant's internalized attitudes (4, 218). Finally, the use of a paper-and-pencil measure of attitude and thus of attitude change, rather than the use of some more behavioral measure, is a deficiency of the present study. Moreover, the measure which was used suffers from a well-known circularity, based on the occurrence of pseudo-low scores (1, 771; 5, 221–222).

Summary

In the social context of the lives of the subjects, and in a natural social experiment which provided randomization of the relevant condition effects, the influence of both membership and reference groups on attitude change was assessed. All subjects shared a common reference group

at the start of the period of the study. When divergent membership groups with disparate attitude norms were socially imposed on the basis of a random event, attitude change in the subjects over time was a function of the normative attitudes of both imposed membership groups and the individuals' reference groups. The greatest attitude change occurred in subjects who came to take the imposed, initially nonpreferred, membership group as their reference group.

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14
The Operation of Group Standards

Leon Festinger, Stanley Schachter, and Kurt Back

The term *group standard*, or *group norm*, has been used freely either to describe or to explain the rather well substantiated finding that members of the same face-to-face group exhibit relative uniformity with respect to specified opinions and modes of behavior. The use of the term, whether in a descriptive or an explanatory manner, has generally carried with it the meaning that this observed uniformity derives in some manner from influences which the group is able to exert over its members. The fact that members of some social set all have relatively similar tastes in, for example, selecting recreational activities, has generally been explained on the basis of interindividual or group influences rather than on the basis of similar circumstances producing similar but independent reactions in a number of people.

There is no question any longer that individuals and groups do exert influences on others which can and do result in uniform opinions and behavior patterns. There have been many studies which have demonstrated the existence and importance of this phenomenon. The classic experiment by Sherif (3) clearly demonstrated that, at least in a situation which was almost completely unstructured, the individual was virtually entirely dependent upon the group for forming a stable mode of response. The strength of the group influence was plainly sufficient to override most individual factors.

It has also been shown, by a series of independent studies (1), that people's aspirations and goal-setting behavior are strongly influenced by information they possess about how others behave and their relationship to these others. All of these influences produce changes in the individual's behavior which result in his being more similar to other members of the group to which he feels he belongs.

Once we depart from the well-controlled laboratory situation it is no longer easy to claim unequivocally that observed uniformity is due to

Condensed from Chapters 5 and 6 of the book by the same authors entitled *Social pressures in informal groups*. New York: Harper, 1950. Reprinted by permission of the authors and Harper & Bros.

group influence. Newcomb (2), for example, in his study of a college community which had a reputation for being liberal found that students consistently became more liberal with increasing length of attendance at the college. It is possible plausibly to maintain that these changing attitudes resulted from group pressures and influences once the student became a member of the community. It would also, however, be possible to maintain that these changes occurred in different people independently as a result of the similar experiences, curricular and otherwise, to which they were all subjected in the rather unique college. The demonstration that a group standard existed would indeed be difficult. Such demonstration would have to rest upon a series of empirical facts concerning the means by which the group enforces the standard, the relation between the pattern of conformity and the group structure, and the relationship to the group of members who deviate from the standard.

The study to be reported here undertook to investigate the nature and operation of group standards in two housing projects. These two projects, Westgate and Westgate West, were occupied by families of students of the Massachusetts Institute of Technology. The homes in Westgate were houses arranged in U-shaped courts. Those in Westgate West were apartments in rows of two-story barracklike structures. The same tenants' organization served both projects. The court in Westgate, and the building in Westgate West, had become the unit of social life in these projects by the time of the study. Friendship groups formed mainly within the court and within the building. The backgrounds and interests of the residents were relatively homogeneous throughout both projects and the assignment of houses or apartments to particular people had not been made on any kind of selective basis. It was also clear that there had been no differential treatment of courts or of buildings. The study of group standards might consequently be pursued fruitfully by carefully examining the reasons for differences in behavior among these social units where such differences emerged.

It was found that differences between courts did exist to a rather marked extent on matters concerning the Westgate tenants' organization. This organization was, at least potentially, of equal relevance and importance to all residents of Westgate and of Westgate West, and all residents were urged to support it. Representation in the Westgate Council was on the basis of courts and buildings, and consequently called for action from each court and each building. Yet, in spite of this equality of relevance, some courts and buildings supported the organization, others were overtly hostile, while still others were indifferent. We shall proceed to examine the determinants of these differences among courts and among buildings to see whether group standards were or were not operating and, if they were, how they made themselves effective.

Attitudes toward the Westgate Council

By May of 1947, when interview data concerning the attitudes of residents toward the Westgate organization were collected, the Council had almost completed the first semester of active existence. Since the turnover in residents occurred mainly at the break between semesters, practically all residents who were living there at the time of the interview had been living in the project when the Council started its active program.

All of the 100 Westgate families and 166 of the 170 Westgate West families were asked, as part of a larger interview, "We understand there is a tenants' organization here. What do you think of it? Are you active in it?" The interviewers were instructed to follow these questions with nondirective probes until they were satisfied that they had obtained an adequate picture of the attitude toward the organization and the degree and kind of participation in its activities. These data were then categorized in the following way:

Attitudes toward the Organization

Favorable. People who considered the organization primarily a good thing. Usually they endorsed both the idea of organization as such and some aims of the Council. Statements ranged from warm approval, "I am definitely in favor of it. It's a worth-while project. It's functioning well," to a vaguely approving, "It's all right."

Neutral. People who mentioned specific good and bad points about the organization so that no definitely favorable or unfavorable attitude could be assigned. In effect, this category included border-line people who had some basic attitude, but saw many points contrary to it. Examples are: "I guess it's all right if they accomplish something—I don't think they have as yet." "It's a good idea, but there are not too many problems for the community to deal with."

Apathetic. People who said they had not been interested enough to find out anything about the organization. In a sense this is a mildly unfavorable attitude—the organization did not concern them. On the other hand, they did not express any directly unfavorable opinion: "Don't know anything about it. Haven't been to any of the meetings or anything. Not knowing, I wouldn't want to say anything."

Unfavorable. People who expressed a definitely unfavorable opinion about the organization, saying that it was a waste of time, that the people in it were objectionable, that they never would achieve anything. "A large majority of the members are reactionary. They give no attention to wider aspects." "It's unnecessary and highschoolish."

Activities in the Organization

Active leader. People who took a definite part in the activities of the Council as a whole, as representatives, committee members, or doing volunteer work. "We've been to meetings as delegates two or three times. I volunteered as bar-

tender for the block party." "I am one of the court representatives. I'm a member of the welcoming committee greeting new residents."

Active follower. People who, though not active in the sense of the previous category, had attended more than one court meeting. They cooperated with the Council as it was set up on the court level. They went to the meetings in which the representatives were elected. They listened to the representatives' reports of the Council's actions and gave their suggestions and complaints to be taken up in the next meeting. They were, therefore, a necessary working part of the organization, although they took no part in the workings of the Council as such. "We have been to the building meetings; that's as far as it goes." "We go to the meetings. Everybody goes to them."

Inactive. People who did not make any effort to keep in contact with the organization. This included both the people who belonged (that is, they considered themselves represented by the Council) and those who did not feel even a formal connection with the Council. From the point of view of actual behavior, these two groups are indistinguishable. "To be truthful, I'm not active. Splendid idea, but I'm too busy." The principal answer from this group was a curt "No." These people did not even attend court meetings.

The questions about attitudes and activity measure two different aspects of a person's relation to the organization. His attitude may stem from a variety of interests and beliefs. He may view the Council as a way of having certain needs satisfied, as a way to meet his fellow tenants, as unrelated to his needs, or as a childish pastime. It is clear that some of these ways of looking at the Council will lead more readily to activity than others. But a resident's actual activity will also depend on other factors—whether he has time, whether a neighbor draws him into some work, whether he sees something that he personally can do. It is therefore possible that attitude and activity may occur together in all combinations, although some are more likely than others. They are distinct, though correlated, variables.

Patterns of Attitude and Activity

There were differences from one court to another in attitude toward and activity in the tenants' organization. This implies that within any one court there was relative homogeneity with respect to both of these factors. In the extreme case, where all members of a court coincided exactly on both of these dimensions, the demonstration of homogeneity would be a simple matter. This extreme case does not occur, of course, and some method must be devised for describing the pattern within any court both with respect to the content of the pattern and the degree of homogeneity. That is, is it a favorable and active court or is it an unfavorable and inactive court? Do 80% of the court members show this behavior and attitude combination, or do only 60% of the court members show it?

It seemed feasible, from the nature of the data, to distinguish four possible types of court patterns: namely, favorable-active, favorable-inactive, unfavorable-active, and unfavorable-inactive. Once it was determined in

which of these categories a court was located, the number of people in the court who conformed to or deviated from the court pattern could then be easily computed. When this was done it would be possible to proceed to a careful examination of whether or not the observed degree of homogeneity within courts was worthy of note, and whether or not it could be attributed to the existence of group standards.

If only these four types of patterns are to be distinguished we must, for this purpose, do some additional combining of the original categories into which the data were classified. This presents no problem for the activity dimension. Clearly the active leader and active follower categories should both be called active; but the combination of the attitude categories presents somewhat more of a problem. The extreme categories, favorable and unfavorable, clearly fall into their proper place. The categories of apathetic and neutral are not quite so clear. It was reasoned that the apathetic people were at least mildly unfavorable to the organization, since they either did not care to know about it or else had simply remained sufficiently out of things not to have heard about what was going on. On the basis of this reasoning, the apathetic people were classed as unfavorable.

The few residents who were classified as neutral were really borderline cases. To some extent they were favorable and to some extent unfavorable. Whatever the court pattern happens to be, in this sense they both conform to and deviate from it on the attitude dimension. In accordance with this view, the neutral people were not considered in determining the court pattern. In any event there were too few people thus categorized to have affected this determination much. Once the court pattern was determined, these neutrals were regarded as conformers if they fell into the proper activity category and were, of course, considered deviates if they did not.

We shall describe the method used for determining the court pattern by using Tolman Court as an example. Looking first at the activity dimension, we found that 12 residents were active and only one was not. On the attitude dimension, nine residents were favorable and two were unfavorable. The classification of this court, then, is "favorable-active." In this case, following our procedure for neutrals, we shall consider anybody who was neutral and active as conforming to the group standard. Of the two neutrals in the court, one followed the group standard and the other did not. The conformers include everybody who was favorable or neutral and active. There were 10 conformers and three deviates from the pattern.

A different type of pattern is shown in Main Court. Here six of the seven residents were inactive, while five were either apathetic or unfavorable. The pattern is therefore "unfavorable-inactive." As the only neutral resident was active, he cannot be considered as conforming to the pattern; he and the favorable inactive resident were deviates. The five inactive

residents, who were either apathetic or unfavorable, conformed to the pattern.

This procedure was carried out for each of the nine Westgate courts and for each of the 17 Westgate West buildings. In Westgate, five of the courts showed a favorable-active pattern, one court showed a favorable-inactive pattern, and three courts showed an unfavorable-inactive pattern. Wide differences did exist among the courts. Also, within each court there was relative homogeneity. Five of the nine courts had a small proportion of deviates. In all but one of the courts the majority conformed to the court pattern.

In Westgate West the degree of homogeneity within the building was perhaps even more striking. Only four of the 17 buildings had as many as 40% deviates from the building pattern, and nine of the buildings had only one or two such deviates. In contrast to Westgate, however, there were no marked differences among the patterns in different buildings. Thirteen of the buildings had favorable-active patterns and four of them had favorable-inactive patterns. There were no buildings with an unfavorable pattern. While in Westgate there was evidence for homogeneity within the court, and heterogeneity among the courts, in Westgate West there seems to have been the same amount of homogeneity among buildings as was found within the building.

If we combine all courts into an over-all Westgate pattern, and all buildings into an over-all Westgate West pattern, this difference between the projects emerges even more clearly. These over-all patterns for the two projects are shown in Table 16.1. In Westgate, no homogeneous over-all pattern exists. Favorable attitudes were displayed by 54% of the residents, unfavorable or apathetic attitudes by 33%, while 49% were active and 51% inactive. If we use the same criteria for determining the over-all pattern here as was used for the individual courts, we would conclude that Westgate had a favorable-inactive pattern from which 78% of the residents deviated. Clearly, the greatest concentrations were in the favorable-active and the unfavorable-inactive quadrants. Even if we depart from our rigorous method of determining patterns and regard the pattern in Westgate as favorable-active, we still find that a majority (56%) of the residents were deviates.

The situation in Westgate West is clearly different. Here 79% of the residents were favorable and only 15% were unfavorable or apathetic, while 62% of the residents were active and 37% were inactive. The over-all pattern is favorable-active. Most of the deviation that did occur from this pattern was on the activity dimension, with little deviation on the attitude dimension.

What may we conclude from this analysis of the patterns within Westgate and within Westgate West? Do we as yet have any evidence for as-

TABLE 16.1

ATTITUDE-ACTIVITY DISTRIBUTIONS
(Percentage)

	Active Leaders	Active Followers	Inactive	Un-classified	Total
			a. Westgate (N = 100)		
Favorable	22	14	18		54
Neutral	2	6	4		12
Apathetic		1	15		16
Unfavorable	2	2	13		17
Unclassified			1		1
TOTAL	26	23	51		100
			b. Westgate West (N = 166)		
Favorable	16	38	24	1	79
Neutral		2	1		3
Apathetic	1	2	8		11
Unfavorable	1		3		4
Unclassified		2	1		3
TOTAL	18	44	37	1	100

NOTE: Significance of difference between Westgate and Westgate West:
Attitude χ^2 = 37.86; p = .01
Activity χ^2 = 12.42; p = .01

serting the existence or nonexistence of group standards? With regard to Westgate we can clearly say that there was no group standard for the project as a whole. There were obviously opposing subgroups within Westgate with regard to both attitude and activity. Can one, however, maintain that there were group standards within each court? At this point this conclusion would seem plausible, although it is by no means unequivocally demonstrated. We must, however, find some explanation why different courts, each composed of the same kinds of people in similar circumstances, reacted so differently from each other toward the organization and why, in spite of different reactions from different courts, there was relatively homogeneous behavior within each court. We at least are led to suspect that group standards or group norms were operating.

In Westgate West, however, we cannot come to the same conclusions. Here it is possible that a group standard existed for the project as a whole; it is possible that group standards existed within each building; and it is possible that no group standards or norms existed at all, but that the obtained high degree of uniformity was due to similar independent reac-

tions of the residents to the same state of affairs. As we have pointed out before, the hypothesis that the uniformity in Westgate West resulted from similar independent reactions of the residents seems probable on the basis of several considerations: Unlike the residents of Westgate, who had been living there up to 15 months and had had four months' actual experience with the organization, the residents of Westgate West were all relative newcomers. The oldest residents of Westgate West had only been living there about five months, and their contact with the Westgate organization had been limited. It was only about one month prior to the collection of these data that Westgate West actually joined the organization. We might expect, then, that in Westgate West, where the social groupings had not had time to form into cohesive units, and where the contact with the tenants' organization was only recent, group norms would not have developed to any considerable degree. The tenants, however, all in the same situation and pretty much the same kinds of people, tended individually to react favorably to the organization.

The Evidence for Group Standards

On the basis of an examination of the actual distribution of conformity to and deviation from patterns of majority behavior, we have arrived at hypotheses concerning the reasons behind the observed degree of uniformity. It has seemed reasonable to suppose that group standards existed in the Westgate courts but that none existed in Westgate West. If this is true, there should be other differences between these two projects which would support these hypotheses. One derivation may immediately be made. If the behavior in Westgate was determined largely by group influences while the behavior in Westgate West was determined largely by individual reactions, then individual differences on relevant factors should show more relationship to attitude and activity in Westgate West than in Westgate.

The personal reasons which residents of the two projects gave for their attitudes, and for whether or not they participated in the activities of the organization, were numerous and varied. Some people had special interests which were aided by the organization; some did not believe in organized activities in general; some said they had no time; some felt that their efforts would be fruitless for the short time that remained for them to stay in the project. All these factors, and others of the same kind, were influences acting on the individual, independently of the group to which he belonged. It would have been desirable, but almost impossible, to obtain reliable indications as to whether or not each of these factors was operating on a particular individual.

Reliable data are at hand, however, concerning the length of time they

expected to remain in the project. This, of course, coincided with the length of time they expected to remain in school and was fairly frequently mentioned as a reason for not participating in the activities of the tenants' organization. These data reveal that there was hardly any difference in attitude between long-term and short-term residents in either Westgate or Westgate West.

The breakdown by activity tells a different story. In Westgate, again, little difference was found. The shortest time group—those moving out in June—could not be affected by any medium or long-range program of the Council. In spite of this, 9 out of 16 cooperated with the Council. The group expecting the longest residence—those who intended to stay at least for a year and were frequently indefinite about how much longer—cooperated even a little less with the Council; only 14 out of 29 fell into these categories. The differences are not statistically significant.

In the activity ratings of the Westgate West residents, however, we find that length of expected residence made a difference. Among the short-term residents, 50% were actively cooperating with the Council, while 72% of the long-term residents were. The median expected residence for the active leaders was 17 months; for the inactive residents 12 months. These differences are significant at the 5% level.

We thus find our derivation borne out. The data support our hypotheses concerning the difference between Westgate and Westgate West. In Westgate West, where individuals were reacting more or less independently in terms of their own needs and preferences, we find a significant and appreciable degree of relationship between how much longer they expected to stay in the project and whether or not they became active in the affairs of the tenants' organization. In Westgate, group influences were important. A major determinant of an individual's activity was whether or not others in his group were active. There was, consequently, no relationship at all between how long one expected to stay there, or how much benefit one would derive from the organizational activities, and whether or not one became active. We may reaffirm our hypotheses with somewhat more confidence now and look for the next testable derivation which we can make.

To be able to create and maintain group standards, a group must have power over its members. This power, the ability to induce forces on its members, has been called cohesiveness. If the group uses this power to make the members think and act in the same way, that is, if there are group standards, the homogeneity of the attitude and activity patterns should be related to the cohesiveness of the group. Correspondingly, if no relation exists between cohesiveness and homogeneity of the pattern, the group does not use its power to induce the members to conform, and we may take it as indicative of the absence of group standards.

The power of a group may be measured by the attractiveness of the group for the members. If a person wants to stay in a group, he will be susceptible to influences coming from the group, and he will be willing to conform to the rules which the group sets up.

The courts and buildings in Westgate and Westgate West were mainly social groups. The attractiveness of the group may, therefore, be measured by the friendships formed within the group. If residents had most of their friends within the court, the group was more attractive to them than if they had few friends within the court. The former situation will imply a more cohesive court, which should be able to induce stronger forces on its members. This should result in greater homogeneity within the more cohesive court than within the less cohesive one.

The necessary measures for determining the relationship between the cohesiveness of the court and the effectiveness of the group standard are easily obtained. Sociometric data from a question regarding who the residents saw most of socially may be used here. Thus, if the members of one court give a total of 30 choices, 18 of which are given to others in their own court, the percentage of "in-court" choices is 60. This court is then considered more cohesive than some other court which gives a total of 32 choices, only 16 of which are to others in the same court. The homogeneity of the court, or how effective the group standard is, may be measured simply by the percentage of members of the court who deviate from the court pattern. The more effective the group standard and the more

TABLE 16.2

COHESIVENESS OF COURT AND STRENGTH OF GROUP STANDARD
(Westgate)

Court and *N* of Residents		% Deviates	Choices in Court / Total Choice	Choices in Court − ½ Pairs / Total Choice
Tolman	13	23	.62	.529
Howe	13	23	.63	.500
Rotch	8	25	.55	.523
Richards	7	29	.47	.433
Main	7	29	.67	.527
Freeman	13	38	.48	.419
Williams	13	46	.53	.447
Miller	13	46	.56	.485
Carson	13	54	.48	.403
R.O. correlation with % deviates			−.53	−.74
t *			1.65	2.92
p			.15	.02

* Testing significance of file and rank order correlation as suggested by Kendall, M. G., *The Advanced Theory of Statistics*. London: Charles Griffin and Co., Limited, Vol. I, p. 401, 1943.

homogeneous the court, the lower will be the percentage of members who deviate. The second and third columns of Tables 16.2 and 16.3 show the percentage of deviates and the proportion of "in-court" choices for each court in Westgate and for each building in Westgate West.

TABLE 16.3

COHESIVENESS OF BUILDING AND STRENGTH OF GROUP STANDARD (Westgate West)

Building	% Deviates	Choices in Building / Total Choices	Choices in Building—½ Pairs / Total Choices
211–20	10	.58	.50
221–30	10	.66	.59
201–10	11	.60	.54
231–40	20	.80	.64
241–50	20	.70	.61
251–60	20	.74	.63
281–90	20	.80	.68
311–20	20	.66	.53
261–70	25	.57	.46
271–80	30	.47	.38
341–50	30	.62	.50
351–60	30	.85	.76
321–30	33	.62	.52
361–70	40	.67	.56
291–300	50	.59	.50
301–10	50	.72	.64
331–40	70	.42	.35
R.O. correlation with % deviates		−.20	−.27
t		.79	1.09
p		not significant	

From our hypotheses concerning the existence of group standards in the Westgate courts and the absence of group standards in the Westgate West buildings, we would expect to find an appreciable negative correlation in Westgate and no correlation in Westgate West between the percentage of deviates and the proportion of "in-court" choices. In Table 16.2 it may be seen that the correlation is −.53 in Westgate. Here, the more cohesive the court (that is, the greater the proportion of "in-court" choices) the smaller the proportion of people who deviated from the court standard. As we expected, this correlation is virtually zero in Westgate West (Table 16.3). Here the proportion of people who deviated from the building pattern had little or nothing to do with the cohesiveness of the building group.

The measure of cohesiveness which we have used may, however, be considerably improved. The major uncertainty in the measure, as it stands, lies in our inability to distinguish between the cohesiveness of the whole group and the cohesiveness of subgroups. For example, a group of eight people all making choices within the group might or might not have high cohesiveness as a total group. As an extreme illustration, there conceivably might be two subgroups of four people each, every member within each subgroup choosing every other member, but without any choices at all between the subgroups. In this case each of the subgroups may have great cohesiveness, but the cohesiveness of the group as a whole would be low. Similarly, if in a group of eight or ten people there is a subgroup of three, the total group would be less cohesive than if no subgroup existed. It appears that if a strongly knit subgroup includes a large majority of the group, the cohesiveness of the whole group may still be high.

This effect of tendencies toward subgroup formation may be taken into account in our measure by correcting for the number of mutual choices which occurred. If there were no tendencies at all toward subgroup formation within a group, then the number of mutual choices which we would expect to occur would be quite low. In a group of ten people with each person giving, say, two choices within the group, we would only expect to obtain two mutual choices in the complete absence of tendencies toward subgroup or pair formation. As the tendencies toward subgroup formation increase, we shall expect to find more and more mutual choices. Thus, the existence of mutual choices to some extent decreases the cohesiveness of the group as a whole.

We may check further on whether or not this relationship was a property of the group as a whole. A corrected measure of cohesiveness, obtained by subtracting half of the number of mutual pairs of choices, is certainly meaningful only as a measure of the group as a whole. The fact that mutual choices occurred certainly does not detract from the personal attractiveness of the individuals involved in these mutual choices. We should then expect the correlation with the measure of prestige of the subgroup to increase when the corrected measure of cohesiveness is used. This correlation in Westgate is .75, representing an appreciable increase in relationship. In Westgate West, where the buildings did not constitute really functional social units, the correlation remains unchanged—still very close to zero.

The Social Status of the Deviate

What are the conditions which produce deviates? When pressures and influences are being exerted on people to adopt a certain way of thinking or a certain pattern of behavior, some people conform quite readily while

others are able entirely to resist these influences. The mere knowledge that these "individual differences" exist does not explain the reasons for them or the factors which are responsible for producing deviates. To learn this, we must examine the means by which group influences may be resisted.

The pressure which a group exerts on its members may be overt and sometimes even formalized. Laws, rules, mores, etiquette, and so on exemplify some of these overt pressures. The pressures which induce men to open doors for women, to dress in certain special ways on certain special occasions, or to enter their fathers' businesses are all overt and recognized. It is likely, of course, that before a group norm or standard can become thus openly formalized it must be in existence for a long time, or else must be of such a nature that deviation from the standard is harmful to the group. Such open pressures are generally also accompanied by open punishment for deviation in the form of censure, overt disapproval, or even rejection from the group.

On the other hand, the pressures which a group exerts on its members may be subtle and difficult to locate. The weight of others' opinions, the gradual change in one's ideas of what is the "normal" thing to do simply because everyone else does it, the mutual influences of people who share their ideas and their attitudes, also serve effectively as pressures toward conformity with the behavior pattern of the group. Under these circumstances the consequences of nonconformity are also more subtle. These consequences may merely be a tendency to prefer those people who are not "different."

There is no indication that in Westgate there was any overt or formalized pressure on court members to conform to the court standard. Many of the residents realized that the people in their court were different from the people in some other court, but the influences which created and maintained these differences among courts were indirect and nonovert. Members of the courts were being influenced in their opinions and behavior merely by virtue of their association with others in their courts, without any formalized "group intent" to influence.

The strength of the influence which the group can exert in this manner depends partly upon the attractiveness of the group for the member and partly on the degree to which the member is in communication with others in the group. No matter how attractive the group is to a particular person, it will be impossible for the group to exert any influence on him if he is never in communication with the group. We may now examine some of the conditions under which individuals will be able to resist these influences.

1. The group may not be sufficiently attractive to the member. Under these circumstances, the relatively weak influence which the group exerts

cannot overcome personal considerations which may happen to be contrary to the group standard. An example will illustrate this phenomenon:

(*Mr. and Mrs. C, in Williams Court.*) We don't have any opinion at all about the organization. We're bad ones for you to interview. We have no need for an organization because we're pretty happy at home. We're socially self-sufficient. Others in the court feel it is wonderful and we discovered many that felt that way. We have friends in this and other courts but our main interests are in the home.

2. There may not be sufficient communication between the member and others in the group. Under these conditions the pressures from the group are simply not brought to bear on the member although, if they had been exerted, they might have been very effective. In such instances the deviate may not even be aware of the fact that he is different from most of the others in his group. An example of this type of deviate follows:

(*Mr. and Mrs. S, in Freeman Court.*) The organization is a good idea, but the trouble with people like us is that we don't have time. That's why we haven't had anything to do with it. I think it's the consensus of opinion that people here don't have the time. [Actually the majority of the people in the court were active.] There are wonderful people living here, but it seems peculiar to Westgate that people are hard to get to know. A lot of people come here expecting to make friends without any trouble, and then find it isn't so easy. It would be a good thing if the organization helped people to get acquainted.

3. The influence of some other group to which the people belong may be stronger than the influence which the court group is able to exert on them. Under these conditions the person who appears as a deviate is a deviate only because we have chosen, somewhat arbitrarily, to call him a member of the court group. He does deviate from his own court, but he conforms to some other group to which he actually feels he belongs. Such a group may, of course, be outside of Westgate altogether. There are instances, however, of people belonging to groups other than their own court, but still within the limits of Westgate:

(*Mr. and Mrs. M, in Carson Court.*) We think the organization is fine and Mrs. M is the chairman of the social committee which is holding its first big event tomorrow night. I don't see much of the others in this court. My real friends are in the next court over there, in Tolman Court. There are only two people living in this court that do anything for the organization, myself and one other person. It's generally understood that the others have different interests. The people in Tolman Court are more active. Carson Court people aren't as sociable as people in Tolman Court.

The Deviate in Westgate

These three types of conditions do, then, appear to produce deviates; at least we were able to locate deviates who seemed to exhibit such patterns of relationship between themselves and the group. If these are the

major factors which make for nonconformity, we should also be able to demonstrate their relevance for all of the deviates rather than for a few selected examples. The two variables, attractiveness of the group for the member and amount of communication between the member and the group, should be reflected in the sociometric choices which people gave and received. We should expect that deviates would give fewer choices to others in their court and would receive fewer choices from them. Whether this happened because they were not in full communication with the group or because the group was not attractive to them, the result in the sociometric choices should be essentially the same—the deviates should be sociometric isolates in their court.

Table 16.4 shows the average number of "in-court" choices given and

TABLE 16.4

AVERAGE NUMBER OF "IN-COURT" CHOICES OF DEVIATES AND CONFORMERS IN WESTGATE

	N	Choices Given	Choices Received
Deviates	36	1.25	1.11
Conformers	64	1.53	1.61

received by the 36 deviates and the 64 conformers in Westgate. It is readily apparent that the deviates were more isolated sociometrically than were the conformers. They both gave and received fewer choices than did the conformers.[1] Moreover, the conformers tended to receive more choices than they gave, while the deviates tended to receive fewer choices than they gave. Deviates tended to choose conformers more than conformers chose deviates. This might be called relative rejection by the conformers.

Deviate status, then, was accompanied by a smaller degree of association with others in the court. It is still possible, however, that these deviates were not true isolates, but merely members of groups other than the court group. In our case studies we saw two examples of this sort. An examination of all sociometric choices exchanged with people outside the court, however, reveals that this was not true of the deviates as a whole. Table 16.5 shows the average number of "out-court" choices given and received by the deviates and conformers. It is clear that the deviates, in the main, were not members of groups other than those of their own court. They gave only as many choices to people outside their own court as did

[1] The significance of the differences in this and the following tables was computed by taking the means for each court and comparing the distributions of these means. This was done because the effects of group standards made the group, not the individual, the unit of sampling. This difference is significant at the 7% level of confidence for choices given. Significance is at the 17% level of confidence for choices received.

the conformers, but received considerably fewer choices from outside than the conformers.[2] We must conclude that these deviates, who had fewer associations within their own court, also had fewer associations with others in Westgate—at least, insofar as this is reflected by the number of choices they received.

TABLE 16.5

AVERAGE NUMBER OF "OUT-COURT" CHOICES OF DEVIATES AND CONFORMERS IN WESTGATE

	N	Choices Given	Choices Received
Deviates	36	1.14	.89
Conformers	64	1.16	1.55

Choices given by deviates to people outside their own court tended to be given to the conformers in other courts. These conformers tended not to reciprocate the choices. The deviate, who was perceived as being different from the others in his court, was not as often chosen by outsiders. This is consistent with our knowledge that the court is perceived as the basis for social grouping in Westgate. People who were on the fringes of their own group were also on the fringe of social life between courts. While conformers in Westgate received an average of 3.16 choices from others, the deviates received an average of only 2.00 such choices. The deviates were relative isolates. It is clear that this isolation was not wholly voluntary on the part of the deviates, since they gave only slightly fewer choices than the conformers.

It is possible to examine the situation of the deviate more closely if we restrict ourselves to the six full-size courts in Westgate. Ten of the houses in these six courts faced onto the street rather than into the courtyard area, so that the people living in these houses had fewer contacts with others in the court. Of the other 68 people living in these courts only 34% were deviates, while 7 of the 10 corner-house residents were deviates. It appears that the isolated geographical position in which these 10 found themselves, and the resultant lack of contact between them and the rest of the court, made it difficult for the court to exert influence on them. The lack of contact suggests that mainly chance factors would determine whether they would show the pattern of attitude and behavior that had become the standard in the court.

Table 16.6 shows the "in-court" choices for these six full-size courts with the corner-house deviates separated from the others. The lack of contact between the court and the deviates in these corner houses is readily apparent. They both gave and received only about one-third as many

[2] Significant at the 2% level of confidence.

choices as did the others in the court.[3] It is not surprising that they had remained uninfluenced by the group standard in their particular court.

TABLE 16.6

AVERAGE NUMBER OF "IN-COURT" CHOICES OF DEVIATES AND CONFORMERS FOR THE SIX LARGE COURTS IN WESTGATE

	N	Choices Given	Choices Received
Deviates in Corner houses	7	.57	.43
Deviates in Inner houses	23	1.52	1.39
Conformers	48	1.52	1.60

The other deviates in the court did not suffer from such lack of contact. They gave as many choices to the others in the court as did the conformers. As was true for all the deviates in Westgate, however, they tended to receive fewer than they gave, while the conformers tended to receive more choices than they gave.[4]

TABLE 16.7

AVERAGE NUMBER OF "OUT-COURT" CHOICES OF DEVIATES AND CONFORMERS FOR THE SIX LARGE WESTGATE COURTS

	N	Choices Given	Choices Received
Deviates in Corner houses	7	1.29	1.14
Deviates in Inner houses	23	1.13	.87
Conformers	48	1.17	1.58

Table 16.7, again, shows that these inner-house deviates were not members of groups other than the court group. They gave only as many choices to people outside their own court as did the conformers and, again, received many fewer.

The deviates stood out as relative isolates, not only within their own court, but in Westgate as a whole. The corner-house deviates received, from all sources, an average of only 1.57 choices, the other deviates received an average of 2.26 choices, while the conformers received an average of 3.18 choices. The conformers were more closely involved with the social life in Westgate than were the deviates. Whether relative isolation brings

[3] For all comparisons this is significant, at least at the 3% level of confidence.
[4] Not statistically significant.

about deviate status (as seems to be the case for those living in corner houses), or whether deviate status tends to bring about isolation through "rejection by others" (as might be the case with the deviates living in inner houses), the two things seem to go hand in hand.

The Deviate in Westgate West

We concluded above that there was no relation in Westgate West between the uniformity of behavior within a building and the cohesiveness of the building, and that group standards were not operating in Westgate West. The opinions of the people about the tenants' organization and their degree of activity in it would, consequently, not be determined by pressures or influences from the group. The behavior of the individual would be more a matter of individual reaction and influence from other individuals than of group pressures.

We may well examine the sociometric status of those people who were different from the majority in their building, although we should not expect the isolation which we found among the deviates in Westgate. These people were deviates only in the sense that they reacted differently from most of the residents, and not in the sense of having successfully resisted group pressures to conform.

Few people in Westgate West expressed unfavorable attitudes toward the organization. Consequently, few people differed from the pattern of their building on the attitude dimension. The great majority of the deviates differed only on the activity dimension from the others in their building. Thirteen of the seventeen buildings had "favorable-active" patterns, and most of the deviates were people who felt favorably inclined, but had merely not attended the meetings of their building. It is plausible to expect, then, that we would find these deviates not to be isolates in the community despite their absence from building meetings. The data corroborate these expectations. Altogether, deviates and conformers both gave an average of about two and one-half choices, and both received an average of about two and one-half choices. We may thus conclude that in the absence of strong group formation, and in the absence of group standards, being different from the people in the group did not result in isolation.

Summary

In order to conclude that observed uniformity in behavior of a number of individuals is the result of the operation of group standards or the existence of "social norms," we must be able to show the existence of psychological groups which are enforcing such standards. A collection of individuals with a relatively high number of sociometric linkages among

them may constitute such a psychological group, or may merely constitute a series of friendship relationships with no real unification of the group as a whole. It is highly likely, of course, that such a series of friendship relationships among a number of people will in time make for the development of a cohesive group. In Westgate West, where there had not been time for this process really to develop, evidence indicating the absence of group standards was found.

When a cohesive group does exist, and when its realm of concern extends over the area of behavior in which we have discovered uniformity among the members of the group, then the degree of uniformity must be related to the degree of cohesiveness of the group, if a group standard is operative. The more cohesive the group, the more effectively it can influence its members. Thus we have found that in the more cohesive groups in Westgate there were fewer deviates from the group pattern of behavior. The cohesiveness of the court group as a whole was the important determinant of the number of deviates. Subgroup formation within the larger group, no matter how cohesive these subgroups may have been, tended to disrupt the cohesiveness of the larger unit.

Although, on the basis of the data available to us, we have not been able to separate clearly the different means by which people can resist group influences and thus become deviates, there is abundant evidence that the attractiveness of the group and the amount of communication between the member and the group are major determinants. It also would seem likely that these two factors would generally not occur separately, but would operate together in most situations. The sociometric status of the deviate is clearly different from that of the conformer—isolation seems to be both a cause and an effect of being a deviate.

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15

Deviation, Rejection, and Communication

Stanley Schachter

The present study is concerned with the consequences of deviation from a group standard. Its immediate background is a study by Festinger, Schachter, and Back (3) of the relationships between group structure and group standards. Findings pertinent to the present study will be briefly reviewed.

1. Within each social group in a housing community there was homogeneity of attitude toward a community-wide problem. Among these groups, however, there was marked heterogeneity of attitude.
2. There was a high positive correlation between cohesiveness of the social group (measured by per cent of in-group sociometric choices) and strength of the group standard (measured by per cent of conformers to the standard).
3. Within a social group, deviates from the group standard received far fewer sociometric choices than did conformers.

The theory developed to explain these findings is as follows: Within any social group, pressures operate toward uniformity of attitude. The origins of such pressures are at least twofold: social reality and group locomotion.

Social reality. On any issue for which there is no empirical referent, the reality of one's own opinion is established by the fact that other people hold similar opinions. Forces exist to establish uniformity and thus to create "reality" for the opinion.

Group locomotion. Uniformity may be necessary or desirable for the group to locomote toward its goal. Locomotion will be facilitated if all members agree on a particular path to the goal.

The strength of the pressures toward uniformity that a group can exercise on its members will vary with the *cohesiveness* of the group and the *relevance* of the issue to the group. *Cohesiveness* is defined as the total field of forces acting on members to remain in the group. Stemming from

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cohesiveness is the property called the *internal power of the group,* which is defined as the magnitude of change the group can induce on its members. The degree of internal power will be equal to the magnitude of the force on the member to remain in the group. If we assume that all groups are attempting to induce the same amount, we can derive that there will be fewer deviates from a group standard in highly cohesive groups than in less cohesive groups.

Relevance refers to the ordering, in terms of importance to the group, of the activities over which the internal power of the group extends. The conceptual dimension along which we can order particular activities as relevant or irrelevant to a particular group still remains unclear. There appear to be three possible bases for such ordering: the importance of the activity for group locomotion, the value which the group places upon the activity, and some hierarchy of needs common to group members in their roles as group members. Whatever the basis for ordering, we may anticipate that a group will exercise greater influence over relevant than over irrelevant activities.

It is assumed that there is a parallel between the process of induction and actual communication; that is, communication is the mechanism by which power is exerted. Therefore, one method by which deviation from a group standard may be maintained is to cut off the deviate from communication with the group. Lack of communication may result from little initial contact between the individual and the group or rejection from the group. In the latter case, if the magnitude of the change that the group attempts to induce is greater than the force on the individual to stay in the group, the deviate will want to leave the group, or the group will tend to push the deviate out of the group, or both.

The present study is specifically concerned with the rejection of a deviate by the group. It is probable that not all groups reject to the same degree, and that rejection is a consequence of deviation on only certain kinds of issues. To delineate more carefully some of the conditions affecting rejection, this experiment examines the effect of degrees of cohesiveness of the group, and relevance of the issue on the degree of rejection of a deviate. The effects of these variables on communication and induction within the groups are also studied.

The Experiment

The experiment was conducted as the first meeting of a club. Four types of clubs were set up, each representing a different degree and combination of cohesiveness and relevance. In each club, paid participants deviated from and conformed to an experimentally created group standard. Discussion in each club was systematically observed. At the end of each meeting members were nominated for committees, and sociometric questionnaires were filled out. These served as measures of rejection.

The four types of clubs set up were case-study, editoral, movie, and radio clubs. There was a total of 32 clubs, eight of each type. Each club had from five to seven members and three paid participants who were perceived as fellow club members. All of the subjects (*Ss*) in the clubs were male college students.

In a typical meeting, after preliminary introductions, each club member read a short version of the "Johnny Rocco" case (2), the life history of a juvenile delinquent, which ended as Johnny was awaiting sentence for a minor crime. The case was presented as that of a real person. The leader of the club, in all instances the experimenter, asked the members to discuss and decide the question, "What should be done with this kid?" The discussion was guided by a 7-point scale made up of alternative suggestions ordered along a love-punishment dimension. Point 1 presented the "all-love" viewpoint, point 7 the "all-punishment" viewpoint. Between these extremes were graded variations of the two points of view.[1] This scale was used to point up the differences of opinion within the group. It was introduced to the club members as a convenient device for learning everyone's position and for channelizing discussion.

After reading the case, each club member announced the position on the scale that he had chosen. Then the three paid participants in each club announced their positions. One paid participant, the "deviate," chose a position of extreme deviation and maintained it throughout the discussion; the second, the "mode," chose and maintained the modal position of group opinion; and the third, the "slider," chose the position of extreme deviation but allowed himself to be gradually influenced, so that at the end of the discussion he was at the modal position.

The case was written sympathetically to ensure that the deviate paid participant would be a deviate. In all clubs almost all members chose positions on the scale emphasizing love and kindness (positions 2–4), and the deviate chose the position of extreme discipline (position 7).

The discussion, limited to 45 minutes, was largely a matter of thrashing out differences of opinion among club members. After 20 minutes the leader took a census to ensure that everyone was fully aware of everyone else's position. He took no part in the discussion except to answer the few questions directed to him. At the end of the discussion a final census was taken. Then the leader turned the discussion to the future of the club. At this time the committee nomination blanks and sociometric questionnaires were filled out.

After each meeting the *Ss* were told that this had been an experiment and not a club, and the purposes of the experiment and the various devices used were fully explained. The *Ss* were asked not to disclose the true nature of these "clubs." There was no indication that anyone gave away the experiment.

How the Variables, Cohesiveness and Relevance, Were Produced

Cohesiveness has been defined as the total field of forces acting on members to remain in the group. The greater the valence of the group for its members, the greater the cohesiveness. Valence of the group derives from at least two sources, the attractiveness of the activities the group mediates and the attractiveness of the members of the group. In this experiment, two degrees of cohesiveness were produced by manipulating the attractiveness of the activities mediated by the groups.

[1] For example, point 3 read: "He should be sent into an environment where providing Johnny with warmth and affection will be emphasized slightly more than punishing him, but discipline and punishment will be frequent if his behavior warrants it." For purposes of brevity the revised case study and the complete love-punishment scale are omitted from this paper. Interested readers may obtain copies by writing to the author.

Subjects were recruited for club membership from economics classes at the University of Michigan. The case-study and editorial clubs were described to half of these classes. The case-study clubs were purportedly being set up at the request of a group of lawyers, judges, and social workers to advise on the treatment and disposition of delinquents, sex offenders, etc. The editorial clubs were supposedly being organized at the request of a new national magazine to advise on feature articles, format, policy, etc. Interested students filled out a blank indicating which club they were interested in joining, and checked two rating scales noting the extent of their interest in each club. These were 4-point scales: "not interested at all," "only mildly interested," "moderately interested," and "extremely interested."

The movie and radio clubs were described to the other half of these classes. The movie clubs were purportedly being set up for a local theatre. The club members were to see films and decide which ones the theatre could successfully program. Radio clubs were supposedly being formed to serve a similar market research function for a local radio station. Students indicated their interest in these two clubs in the manner described above.

The case-study and movie clubs were high cohesive groups, made up of students who had checked between "moderately interested" and "extremely interested" on the scales for these clubs. The editorial and radio clubs were low cohesive groups, made up of students who indicated high interest in joining the case-study or movie clubs and little or no interest in joining the editorial or radio clubs.[2] Students becoming members of clubs they were interested in joining made up the high cohesive groups. Those becoming members of clubs they were not interested in joining made up the low cohesive groups. In short, *cohesiveness* is defined here in terms of the valence of the activity.[3]

Relevance has been defined as an ordering of group activities along a dimension of "importance" to the group. Two degrees of relevance were produced experimentally. In one case, *Ss* were concerned with an activity corresponding to the purpose of the club. In the other case, *Ss* were concerned with an activity which had nothing to do with the purpose of the club.

Case-study and editorial clubs discussed a case study and a feature article, respectively. Movie and radio clubs discussed issues foreign to the purpose of the clubs; each began with an appropriate subject but was diverted to a side issue. The movie clubs saw a 15-minute film, and the radio clubs listened to a 15-minute recording. Then the leader introduced the observer as someone who had written up the "Johnny Rocco" case and wanted the help of the group to discuss what should be done with him. The group was assured that this had nothing to do with the club and would never happen again. With some enthusiasm from the paid participants, the group always agreed to discuss the case.

To make constant the time of interaction among *Ss*, radio and movie clubs were chosen as a setting for the irrelevant issue. The *Ss* were unable to interact while looking at a movie or listening to a recording. Therefore, their discussion time was the same as that of *Ss* discussing relevant issues.

[2] A subject did not know which of the two clubs he had come to until the meeting was under way.

[3] This may seem a rather restricted definition of cohesiveness. Back (1), however, has demonstrated that cohesiveness, no matter what its source, can be considered a unitary concept. Whether cohesiveness is based on friendship, the valence of the activity mediated by the group, or group prestige, the consequences of increasing cohesiveness are identical.

To compare data obtained in the four types of clubs, it was necessary that the content be constant. This was done by using the "Johnny Rocco" case and the love-punishment scale in all the clubs. In case-study clubs, "Johnny Rocco" was the case for the day. In editorial clubs, "Johnny Rocco" was part of a feature article on juvenile delinquency. In movie and radio clubs, "Johnny Rocco" was the irrelevant issue. In all clubs the scale was the basis for discussing, "What should be done with the kid?"

In summary, there were four kinds of clubs, each reproducing a different combination of the experimental variables, as follows:

1. High cohesiveness–relevant issue (Hi Co Rel): Case-Study Club
2. Low cohesiveness–relevant issue (Lo Co Rel): Editorial Club
3. High cohesiveness–irrelevant issue (Hi Co Irrel): Movie Club
4. Low cohesiveness–irrelevant issue (Lo Co Irrel): Radio Club

In the procedure used there are two possible sources of selective error: (*a*) Possibly students interested in the case-study and editorial clubs were selectively different from those attracted to the movie and radio clubs. However, more than 80% of the students addressed asked to join one of the clubs. More than 90% of these expressed preferences for case-study or movie clubs. (*b*) Students assigned to case-study and movie clubs rated editorial and radio clubs slightly more favorably than students assigned to editorial and radio clubs. Possibly students in case-study and movie clubs were more attracted to the idea of a club, any kind of club This factor, however, probably had little effect on experimental results. In the degree of rejection of the deviate, no difference was found in high cohesive groups between students who rated the nonpreferred activity high and those who rated it low.

The Validity of the Manipulation of Cohesiveness

The manipulation of cohesiveness began with the canvassing for *Ss* and their assignment to clubs on the basis of preliminary interest ratings. This method of assignment is summarized in Table 17.1, where figures were obtained by assign

TABLE 17.1

MEAN RATINGS ON SIGN-UP SHEETS

Group	Case-Study	Editorial
Hi Co Rel	3.27	2.20
Lo Co Rel	3.33	1.71
	Movie	Radio
Hi Co Irrel	3.53	2.24
Lo Co Irrel	3.34	1.59

ing numerical values to the four points of the rating scale. "Not interested at all" has the value 1; "extremely interested" has the value 4; and the two intermediate points, the values 2 and 3. The figures are the mean ratings of each club made by all *Ss* assigned to a particular experimental condition. There is a marked difference between *Ss* in high and low cohesive groups in their ratings of the clubs to which they were assigned. In the low cohesive conditions, all but two *Ss* rated the clubs in which they were placed between "not interested at all"

and "only mildly interested." In the high cohesive conditions, all but two *Ss* rated the clubs in which they were placed between "extremely interested" and "moderately interested."

How successful was this method in manipulating cohesiveness? At the end of each meeting, each *S* filled out a cohesiveness questionnaire designed to determine his intentions toward the club. There were three questions:

1. Do you want to remain a member of this group?
2. How often do you think this group should meet?
3. If enough members decide not to stay so that it seems this group might discontinue, would you like the chance to persuade others to stay?

Table 17.2 summarizes the data from this questionnaire and shows marked differences between high and low cohesive groups. In high cohesive groups 101 of the 102 *Ss* wanted to continue their memberships; in low cohesive groups only

TABLE 17.2

BREAKDOWN OF ANSWERS TO THE COHESIVENESS QUESTIONNAIRE

Group	*N*	Question 1 Want to remain member?		Question 2 Frequency of meetings?		Question 3 Want to induce others to stay in club?	
		Yes	No	Once or Twice a Week	Once Every 2, 3, or 4 Weeks	Yes	No
Hi Co Rel	53	98%	2%	61%	39%	73%	19%
Lo Co Rel	50	68	32	54	46	51	34
Hi Co Irrel	49	100	0	73	27	61	35
Lo Co Irrel	46	61	39	36	64	21	71

62 of 96 *Ss* wanted to do so. There are differences, too, between *Ss* in the two conditions who wanted to remain in their clubs. Such *Ss* in low cohesive groups wanted to meet less often and were less willing to persuade others to stay in the club than were *Ss* in high cohesive groups. The manipulation was clearly successful in producing groups with different degrees of cohesiveness.

The Paid Participants

The three paid participants in each group were perceived as fellow club members. Like the *Ss*, they were male undergraduates. In each meeting, in each condition, they played three roles, deviate, mode, and slider. The deviate adopted the position of extreme discipline and maintained it throughout the discussion. The mode championed that position which the modal number of members supported. If during the meeting the modal position shifted, he shifted. The slider began as an extreme deviate (position 7) and during the meeting moved step by step to the modal position.

The mode and slider roles were controls. The deviate and the mode provided evidence of the effect of deviation as contrasted to conformity. Comparison of the slider and the deviate tested whether rejection was a result of having at one time, but no longer, championed a deviate position, or of simply maintaining deviancy against all attempted influence.

The three roles were systematically rotated among four paid participants so that each played each role twice in each experimental condition. To assure constancy

from meeting to meeting, rules of behavior guiding the paid participants in any role were carefully defined: (*a*) Each paid participant had to speak once every five minutes. If during any five-minute interval no one addressed a remark to him, he initiated a communication. (*b*) Where possible, all communications made by the paid participants, whether initiated or in response to someone, were rephrasings of the position he was maintaining at the time. (*c*) When it was impossible simply to rephrase the position, the paid participants at the deviate position were permitted two standard arguments:

1. Despite the fact that Johnny was shown love and affection, he went back to stealing.
2. It could not be said that discipline would not work, since it had not consistently been applied to Johnny.

Measures of Rejection

After the discussion the leader introduced the subject of the club's future and proposed a plan by which a functioning group could be organized. To expedite such organization, each member filled out three mimeographed sheets: a committee nomination blank, a sociometric test, and the cohesiveness questionnaire described earlier.

Committee nominations. Three committees were set up, differing with respect to interest of the work, importance of the assigned functions, and delegated responsibility for club activities. They were called the Executive, Steering, and Correspondence Committees. In each club, the job of each committee was defined in much the same way, but with slightly different content. The Executive Committee was to decide what the group should discuss, to act as liaison agent between the club and its sponsoring agency, and to determine club policy. The Steering Committee was to prepare and present discussion materials and determine discussion procedure. The Correspondence Committee was to perform secretarial functions.[4]

The *Ss* were instructed to nominate persons whom they considered most capable of handling the work of each committee. They were not to nominate themselves or the same person for more than one committee. The number of members on each committee was manipulated so that no matter what number were present in any particular group, everyone had to nominate everyone else present for some committee. When 10 people were present, each member nominated three people for each committee; when nine people were present, only two people were nominated for the Correspondence Committee; and, when eight people were present, two people were nominated for the Steering Committee and two for the Correspondence Committee. The importance or unimportance of the committees to which the paid participants were nominated serves as an index of acceptance or rejection.

The sociometric test. Subjects were informed that it might become necessary to reduce the number of club members or to break up the group and portion out its members to one of the other clubs, and that therefore it would be helpful to know which people would like to remain together. They were asked to rank everyone present in order of preference for remaining in the same group with

[4] To check on whether or not jobs on these committees actually did vary in attractiveness, in several of the groups the members were asked to write their own names next to those committees in which they were most interested. Most requested the Executive Committee, a few the Steering, and none the Correspondence Committee.

themselves. In contrast to committee nomination instructions, the emphasis here was on congeniality. These data provide a sociometric index of rejection.

The Observation Schedule

An observer, introduced as a friend interested in what the club was doing and who could be imposed upon to take notes, recorded the following aspects of the group process: (*a*) who spoke to whom; (*b*) the length, in time, of the communication; (*c*) whether the speaker attacked or supported the position of the person to whom he spoke; (*d*) whether a communication, even if not addressed to a person at a specific position, implied approval or disapproval of this position; and (*e*) whether the speaker talked about experiences from his own or his friends' personal histories.

Rationale

The setup described, while constituting a reasonably well controlled experimental situation, represented for the *S*s a real-life situation. What was for the experimenter a method of manipulating a variable was for *S* a club he was interested in joining. The measuring instruments were conventional methods of electing officers, and so on. In short, the experiment was fitted within a social framework completely consistent with the idea and operation of a club, with no sacrifice of experimental control. The rationale for this procedure was the assumption that it would be possible to reproduce the variables and phenomena under study with greater intensity in a purportedly "real-life situation" than in a laboratory setup that was identified as such. It is possible to produce complex social phenomena in laboratory experiments. Which procedure is more "effective" in the study of particular social phenomena can only be determined by additional investigation.

The Theoretical Relationships among Cohesiveness, Relevance, and Rejection

The theory presented in the introduction can now be expanded to make specific derivations as to the degree of rejection anticipated in each experimental condition. The theory states that there are pressures toward uniformity of behavior and attitude among members of most social groups. If differences of opinion exist within a group, forces will arise on the members to restore uniformity. A number of corrective tendencies will develop: for example, pressures develop to change the opinions of members of the group holding opinions different from one's own; pressures arise to change one's own opinion to coincide more closely with those of other group members; a tendency develops to decrease one's dependence on deviant members as appropriate reference points in establishing the reality of one's own opinion. In any group where differences of opinion exist probably all of these tendencies exist and are, we shall say, simultaneously a function of the total pressures toward uniformity. In the

present experimental situation where almost all group members were of similar opinions and there was only one deviate, it seems reasonable to suggest that the predominant tendencies acting on them were the pressures to change the opinion of the deviate, and the tendency to decrease dependence on the deviate as a point of reference for establishing social reality.

A. *Pressures to change* (Pch) refer to the magnitude of pressures acting on group members to change a deviant opinion to conform more closely with their own. We make these assumptions about the relationship of Pch with the variables cohesiveness, relevance, and state of opinion:

1. *With increasing difference of opinion the magnitude of Pch should increase.* If uniformity exists, Pch should have zero magnitude. As group opinion departs more and more from uniformity, Pch should correspondingly increase.

2. *With increasing cohesiveness, the magnitude of Pch should increase. At any point along a scale of difference of opinion, Pch should be greater for high than for low cohesive groups.*

Pressures to uniformity arise in part from a need for social reality within an appropriate reference group. A cohesive group, in which membership is valued, can be considered a more important reference group than a low cohesive group in which membership is not particularly cherished. Therefore, we can anticipate that pressures to uniformity will be greater in high than in low cohesive groups.

3. *With increasing relevance of issue, the magnitude of Pch should increase.* Any set of activities can be ordered along some dimension of "importance" (relevance) for a particular reference group. It is plausible to assume that for activities which are of importance to the group, greater pressures to change will exist than for activities which are unimportant.

B. *Dependence* (Dep) refers to the extent to which members of a group rely on one another as reference points in establishing social reality. We make these assumptions about the relationships of dependence with the variables cohesiveness, relevance, and state of opinion:

1. *With increasing difference of opinion the magnitude of Dep will decrease.* If opinions are identical, dependence will be high. When persons have different opinions, it is unlikely that they will depend on one another to establish the reality of their opinions.

2. *With increasing cohesiveness, the magnitude of Dep will increase.*

Members of a high cohesive group (a valued and important reference group) will be more dependent on one another than will members of a low cohesive group.

3. *With relatively small differences of opinion, the magnitude of Dep will increase with increasing relevance of issue. As difference of opinion increases, Dep for relevant issues decreases more rapidly than Dep for irrelevant issues, and a point of zero Dep will be reached with less difference of opinion for relevant than for irrelevant issues.*

The more "important" an issue to a particular group, the greater the extent to which group members depend on one another for social reality. On relevant issues, it will be more important that the reference group which establishes social reality have similar opinions than on less relevant issues. Therefore, dependence should decrease more rapidly with increasing perceived difference, and should reach the point of zero dependence earlier for highly relevant issues than for irrelevant issues.

These relationships are presented graphically in Figure 17.1. The rising Pch curves and falling Dep curves with increasing difference of opinion express assumptions A1 and B1, above. The greater magnitude of high cohesive than of low cohesive curves (relevance held constant), and of

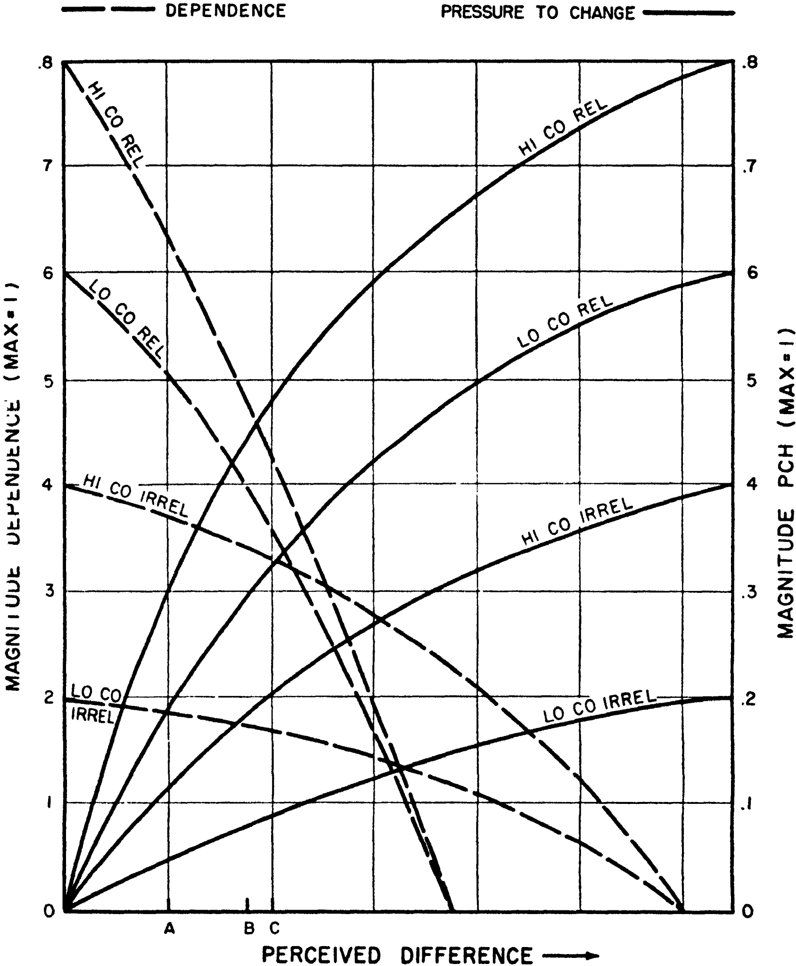


FIG. 17.1. Theoretical curves of the relationships between dependence, pressures to change, and cohesiveness, relevance, and perceived difference of opinion.

relevant than of irrelevant Pch curves (cohesiveness held constant), expresses assumptions A2, A3, and B2. At low levels of perceived difference with cohesiveness held constant, the magnitude of relevant Dep curves is greater than that of irrelevant Dep curves. Curves for relevant conditions drop at a faster rate and reach the point of zero dependence with far less

perceived difference than do curves for irrelevant conditions. This is an expression of assumption B3.

For each condition, the maxima of the Pch and Dep curves are of the same magnitude. We assume that the maxima of both factors are similarly a function of total pressures to uniformity. The scale of magnitude along the ordinate of this graph has maximum = 1. The values assigned are, of course, arbitrary and purely illustrative.

From these curves we can make predictions concerning the interrelationships among cohesiveness, relevance, and degree of rejection.

We shall coordinate rejection to the amount of pressures to change that do not find public expression. The amount of pressures that do find public expression we call *communication*. Dependence defines the proportion of pressures to change that can be expressed. Multiplying these two factors, therefore, gives the amount of pressures that will actually be exerted.[5]

$$\text{Comm} = \text{Pch} \times \text{Dep}$$

Rejection, then, which is defined as the amount of pressures not exerted, is computed by multiplying Pch by the quantity (1 − Dep).

$$\text{Rej} = \text{Pch} \times (1 - \text{Dep})$$

The number 1 represents maximum dependence, the point at which all Pch will be communicated. The greater the pressures and the smaller the dependence, the greater the rejection. In effect, this formula suggests that rejection requires relatively little dependence on a person and, at the same time, relatively high pressures to change him. If pressures to change are high but dependence is high, rejection will be relatively slight. If dependence is low but there are no pressures to change, rejection will not occur.

Applying this formula to the postulated curves in Figure 17.1, we find these relationships. At point *A* in this figure:

	Pch × (1 − Dep) = Rej
Hi Co Rel	.300 × (1 − .650) = .105
Lo Co Rel	.185 × (1 − .513) = .090
Hi Co Irrel	.110 × (1 − .375) = .069
Lo Co Irrel	.050 × (1 − .185) = .041

At point *B* where the perceived difference is somewhat greater:

	Pch × (1 − Dep) = Rej
Hi Co Rel	.437 × (1 − .487) = .224
Lo Co Rel	.295 × (1 − .409) = .174
Hi Co Irrel	.175 × (1 − .341) = .115
Lo Co Irrel	.075 × (1 − .175) = .062

[5] This theory of communication will be developed and expanded in the following section.

These trends become clear: (*a*) As perceived difference increases, the degree of rejection in each of these conditions will increase. (*b*) At any point beyond zero, along the axis of perceived difference:

Rej in Hi Co Rel > Rej in Lo Co Rel
Rej in Hi Co Irrel > Rej in Lo Co Irrel
Rej in Hi Co Rel > Rej in Hi Co Irrel
Rej in Lo Co Rel > Rej in Lo Co Irrel[6]

Thus, the set of assumptions determining the shapes of these curves leads to these experimental predictions:

1. Persons in the mode and slider roles (who at the end of a meeting are close to zero perceived difference) will be rejected less (if at all) than will persons in the deviate role.

2. From experimental condition to condition, the degree of rejection of persons in the deviate role will vary in the order noted in trend (*b*) above. With cohesiveness constant, rejection will be greater in relevant than in irrelevant groups. With relevance constant, rejection will be greater in high than in low cohesive groups.

Results

The post-meeting nominations for committees and the sociometric rankings of all club members provide two indices of rejection, i.e., nominations to the less important committees and relatively low sociometric rankings.

Sociometric Rankings

At the end of each meeting the members of each club ranked everyone in the order of his desirability as a fellow club member. The instructions emphasized congeniality and compatibility as the basis for ranking. The lower the ranking, the greater the rejection.

Table 17.3 presents mean sociometric rankings of each paid participant in each condition. Each figure in the table is the mean of the mean sociometric rankings in each group. The *N* for each figure is 8, the number of groups in each condition. Since the groups varied in size from eight to ten members, all rankings were corrected to equivalent scores by adopting the nine possible rankings in a group of ten people as a basic scale and correcting rankings in smaller groups to equivalent scores. The mean rank in every group is 5.

[6] It is impossible to make an exact prediction about relative rejection between the Lo Co Rel and Hi Co Irrel conditions. Though the curves imply Rej in Lo Co Rel > Rej in Hi Co Irrel, this was done purely for illustrative simplicity. We have, of course, no way of determining the relative contributions of cohesiveness and relevance in a comparison of Lo Co Rel and Hi Co Irrel conditions.

These relationships emerge from Table 17.3: (*a*) In any condition, mean rankings of either mode or slider are considerably below mean rankings of the deviate. All mode-deviate differences are significant by a *t*-test at the 7% level of confidence or better. Clearly, a penalty of relative rejection is imposed on a deviate. (*b*) There are no significant differences in rankings of either the mode or slider when comparisons are made between conditions.[7] The variables of cohesiveness and relevance have no effects on group evaluation of individuals who are at, or who adopt, the group

TABLE 17.3

MEAN SOCIOMETRIC RANKINGS OF THE PAID PARTICIPANTS

Group	Deviate	Mode	Slider
Hi Co Rel	6.44	4.65	5.02
Lo Co Rel	5.83	4.70	4.56
Hi Co Irrel	6.51	4.68	4.44
Lo Co Irrel	5.67	3.83	5.03

norms. (*c*) The deviate is rejected more strongly in high than in low cohesive groups. Between rankings in high and low cohesive groups, the *t* is significant at the 12% level for the difference between Hi Co Rel and Lo Co Rel, and at the 1% level for the difference between Hi Co Irrel and Lo Co Irrel.[8] As predicted, greater cohesiveness produces greater rejection.

There is, however, no immediate evidence that the variable, relevance, affects the degree of rejection. The mean sociometric rankings of the deviate in the relevant and irrelevant condition, with cohesiveness constant, are about the same. This may be attributed in part to the fact that the measurement is a relative one, indicating only an individual's relative preference for one person over another, with no indication of the absolute intensity of like or dislike. There is, however, some indication of the relative intensities of the ratings in each condition. Occasionally an individual refused to fill in the sociometric sheet, or simply put in numbers in sequence, explaining that he was unable to discriminate among the people present. Random ranking implies that there was no genuine basis on which to express preference. If, therefore, any one experimental condition has a significantly greater number of random rankings than do the others, it may be inferred that, in general, all rankings in this condition were made with less basis for expressing preference and imply less intensity of like or dislike than in a condition where random responses are rare. More than twice as many random rankings were made in

[7] The largest difference, that between the Hi Co Irrel and Lo Co Irrel conditions for the mode, is significant by *t*-test at only the 28% level.

[8] In all tests of significance mentioned in this section, the group rather than the individual was considered the unit.

irrelevant conditions as in relevant. Of all group members, 16% ranked randomly in the irrelevant conditions and 6.8% in the relevant conditions. This difference is significant by chi-square with 1 *d.f.* at the 2% level. There were no significant differences between Hi Co Rel and Lo Co Rel or between Hi Co Irrel and Lo Co Irrel. Though mean rankings are about the same for relevant and irrelevant conditions, random rankings of the deviate seem to imply less strong feelings of rejection in the irrelevant groups.

These sociometric data are in the directions predicted: (*a*) Paid participants in the mode and slider roles were not rejected; as deviates they were definitely rejected. (*b*) There is greater rejection of the deviate in high than in low cohesive groups. (*c*) Though sociometric rankings of the deviate are about the same for relevant and irrelevant conditions, random sociometric rankings indicate that the intensity of rejection in irrelevant conditions was less than in relevant conditions.

Assignment to Committees

With instructions emphasizing competence for the job, the members of each club nominated people for membership on the Executive, Steering, and Correspondence Committees. Rejection is coordinated to assignment to the least desirable committee. The Executive was the most attractive committee and the Correspondence the least attractive.

Tables 17.4, 17.5, and 17.6 present the data on the assignment of paid participants in the mode, slider, and deviate roles to the three committees.

TABLE 17.4

PERCENTAGE OF SUBJECTS ABOVE CHANCE ASSIGNING "MODE" TO COMMITTEES

Group	Executive	Steering	Correspondence
Hi Co Rel	−4.56	+6.76	−2.22
Lo Co Rel	−9.83	+20.15	−10.44
Hi Co Irrel	−0.08	+6.85	−6.93
Lo Co Irrel	+3.70	+3.70	−8.07

All figures in each table represent the percentage, above or below chance expectancy, of all persons in each condition who assigned the various roles to the different committees. In Table 17.4, the mode was nominated for the Executive Committee by 4.56% less than we would expect if nominations in the Hi Co Rel condition had been made on some randomly determined basis. Varying group sizes, affecting the probability of any one person being assigned to a particular committee, necessitated computation of chance expectancies.

The standard errors of all chance percentages are close to 6.20.[9] Any score greater than 10.23 is significant at the 10% level; greater than 12.09 is significant at the 5% level; and greater than 15.93 is significant at the 1% level. If the 5% level is accepted, Table 17.5 reveals no significant fluctuations from chance in assigning the slider to any one particular committee. Similarly, for the mode, in Table 17.4, we find only one score that departs significantly from chance, assignment of the mode to the Steering Committee in the Lo Co Rel condition. With the large number of scores obtained, this may be interpreted as a chance fluctuation. There is no indication of systematic rejection for the mode or slider roles.

TABLE 17.5

PERCENTAGE OF SUBJECTS ABOVE CHANCE ASSIGNING "SLIDER" TO COMMITTEES

Group	Executive	Steering	Correspondence
Hi Co Rel	+1.76	−5.93	+4.16
Lo Co Rel	+7.32	−7.86	+0.50
Hi Co Irrel	−4.97	+4.38	+0.39
Lo Co Irrel	+2.69	−3.52	+0.16

Table 17.6 for the deviate presents a completely different picture. In all conditions, except Lo Co Irrel, the deviate is overnominated for the Correspondence Committee and undernominated for the Executive Committee. Deviation results in assignment to a relatively peripheral position in the role structure of the group. Not only is the deviate considered relatively undesirable as a fellow club member, but also least capable of handling the important jobs in the club.

TABLE 17.6

PERCENTAGE OF SUBJECTS ABOVE CHANCE ASSIGNING "DEVIATE" TO COMMITTEES

Group	Executive	Steering	Correspondence
Hi Co Rel	−14.00	−8.34	+22.31
Lo Co Rel	−17.58	−7.81	+25.26
Hi Co Irrel	−16.41	+4.83	+11.44
Lo Co Irrel	+10.16	−9.40	−1.30

[9] This score was computed using $\sqrt{\frac{pq}{n}}$, the customary formula for computing the standard error of a percentage. Since the number of cases varied slightly from condition to condition, and p varied slightly with the number of people in each group, the standard error 6.20 is a convenient approximation. The obtained standard errors for each committee in each condition are all quite close to this figure.

The degree of rejection, however, is affected by the experimental variables. Rejection is greater in both relevant conditions than in the irrelevant conditions. A t-test with 30 $d.f.$ yields significance at the 2% level of confidence for this difference. Differences between the degree of rejection in high cohesive groups and low cohesive groups, however, are less clear-cut. Although there is a difference between high and low cohesive irrelevant conditions significant by t-test at the 10% level, there is no difference between the two relevant conditions. This is clearly inconsistent with theoretical expectations. Possibly the committee assignment measure should also be considered a relative measure that gives no indication of intensity of feeling. It is plausible that though there is no difference between high and low cohesive relevant groups in the percentage of people assigning the deviate to the Correspondence Committee, the intensity of rejection is greater in high than in low cohesive groups. In contrast to the sociometric ranking, however, no individual had difficulty in making these judgments, and there is no evidence of random assignment to committees. This may possibly be attributed to the different natures of the measures. A judgment of fitness for a particular job is a fairly everyday matter. Decisions about which people should be in or out of a group appear to be a more unusual sort of judgment to make.

Except for this single inconsistency, the data support the predictions. Neither the mode nor the slider was rejected. In all conditions except Lo Co Irrel, where we anticipated very little rejection, the deviate was overnominated for the Correspondence Committee. Rejection of the deviate was greater in the relevant than in the irrelevant conditions, and greater in the Hi Co Irrel than in the Lo Co Irrel condition.

The Process of Communication

The previous section has treated the relationships between experimental manipulations and post-meeting measurements. This section relates the processes of induction and communication, as they occurred during the meetings, to the experimental variables, cohesiveness and relevance, and to the post-meeting measurements.

We shall consider communication, the process of one person talking to another, as the mechanism of induction, i.e., the means by which influence is exerted. There are, of course, other reasons why people communicate, but within the confines of this experiment and theory we shall largely limit ourselves to communication as influence.

From the theoretical elaboration of "pressures to uniformity," specific derivations may be made about certain aspects of the patterns of communication that occurred in these meetings. Let us first relate the constructs, Pch and Dep, to the occurrence of communication.

1. Pressures to change others mean pressures to influence others, which we will consider identical with pressures to communicate. Our earlier assumptions may, therefore, be extended to communication pressures. The pressures to communicate to a deviate will rise with increasing perceived difference, increasing cohesiveness, and increasing relevance.

2. Dependence refers to the extent to which a person relies on another person or group of persons to establish social reality. It defines the proportion of pressure to change that can actually find public expression. Actual communication, then, is a function of both Dep and Pch, with dependence modifying the proportion of pressures to change that will be expressed publicly. Actual communication is formulated as $Comm = Pch \times Dep$.

In Figure 17.2, the heavily dotted lines, constructed by making the proper multiplications at each point, represent the magnitude or frequency of actual communication that should be directed at positions with different degrees of perceived difference in the four experimental conditions.[10] This figure is the same as Figure 17.1, with the curves for predicted communication added.

Let us examine more closely the meaning of "perceived difference." It refers to the phenomenological difference between two people rather than to the absolute difference between two points on the love-punishment scale. Two people may be at position 4 on the scale and perceive the difference between themselves and someone at position 7 as of very different orders of magnitude. We shall postulate that in this experiment perceived differences increased with discussion. In all club meetings the question, "How much do we really differ?" was frequently discussed, and attempts were made to reduce the distance between points on the scale. The deviates, however, were specifically instructed to resist attempts to minimize differences between themselves and people at other positions. The assumption that perceived difference increases with discussion seems reasonable, therefore, in this situation.

Accepting this assumption, we may say that the dotted curve of communication in Figure 17.2 represents the actual pattern of communication during the course of the meeting. From these considerations a number of

[10] The coordination of rejection to the amount of pressures that are not publicly expressed can be demonstrated graphically in Figure 17.2. At any point along the axis of perceived difference, rejection is equal to the difference between the height of the appropriate derived curve of actual communication and the height of the corresponding curve for Pch.

This relationship is simply stated algebraically:

$$\begin{aligned} \text{Rej} &= \text{Pch} \times (1 - \text{Dep}) \\ &= \text{Pch} - \text{Pch} \times \text{Dep} \\ \text{Comm} &= \text{Pch} \times \text{Dep} \\ \therefore \text{Rej} &= \text{Pch} - \text{Comm} \end{aligned}$$

testable derivations may be made about the frequency and pattern of communication to each paid participant in each condition.

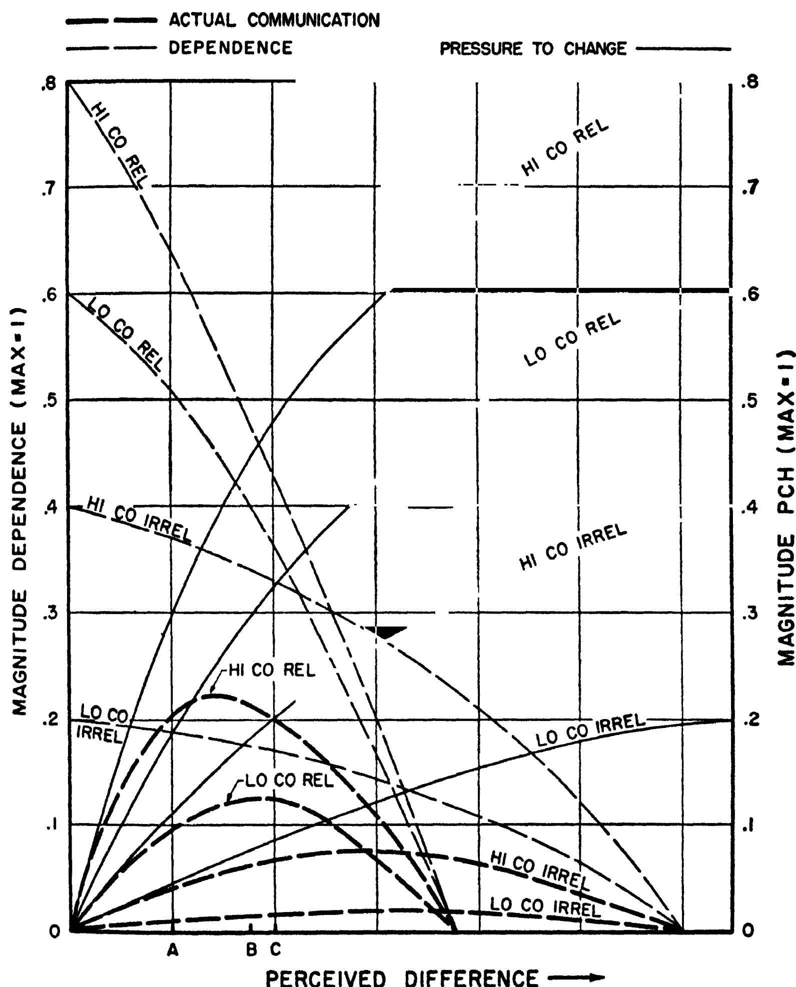


FIG. 17.2. **Derived curves of actual communication in the four experimental conditions.**

Communication Patterns to the Deviate

A prediction previously developed was that rejection will increase with increasing perceived difference. Therefore, people who strongly reject the deviate perceive a greater difference between themselves and the deviate than do people who do not reject. In Figure 17.2, point *C* represents the

position of a rejector at the end of a meeting, point *B* the position of a mild rejector, and point *A* the position of a non-rejector. If perpendiculars are projected from these points, they intercept the communication curves at different relative positions.

If we accept the assumption that perceived difference increases with discussion time, and postulate that points *C, B,* and *A* in Figure 17.2 represent, respectively, the end-of-the-meeting perceptions of people who reject the deviate strongly, reject mildly, and do not reject, then we must say that the curves of actual communication up to points *C, B,* and *A* represent the patterns of communication from these three kinds of people to the deviate during the course of the meeting. In Figure 17.3 these predicted curves of communication, projected from Figure 17.2, are drawn for these three kinds of people for each experimental condition. These curves are specific predictions about the pattern and magnitude of communication to the deviate.

In Figure 17.3 the ordinate represents the amount of communication during the meeting, and the abscissa represents the flow of time from zero to 45 minutes. A point on these curves represents the amount of com-

TABLE 17.7

MEAN NUMBER OF COMMUNICATIONS ADDRESSED TO DEVIATE DURING THE COURSE OF THE MEETING BY SUBJECTS WITH DIFFERENT POST-MEETING REACTIONS TO HIM

GROUP	*N*	TIME INTERVAL IN MINUTES			
		5–15 *	15–25	25–35	35–45
Hi Co Rel					
Non-rejectors	13	1.15	0.92	2.15	1.54
Mild rejectors	15	0.40	1.27	1.87	0.86
Strong rejectors	25	0.68	1.60	1.52	0.76
Lo Co Rel					
Non-rejectors	13	0.38	0.54	0.84	0.46
Mild rejectors	22	0.58	0.50	1.23	1.73
Strong rejectors	15	0.26	0.47	1.27	2.99
Hi Co Irrel					
Non-rejectors	9	1.32	1.44	0.99	2.44
Mild rejectors	20	1.15	1.35	1.55	1.20
Strong rejectors	20	0.75	1.15	1.60	3.42
Lo Co Irrel					
Non-rejectors	16	1.69	1.69	2.34	2.12
Mild rejectors	15	1.47	0.94	2.20	3 74
Strong rejectors	15	1.20	0.74	2.47	2.87

* Because the first few minutes of many meetings were concerned with technical problems and deciding just what was to be done, data from the 0–5 time interval are not reported.

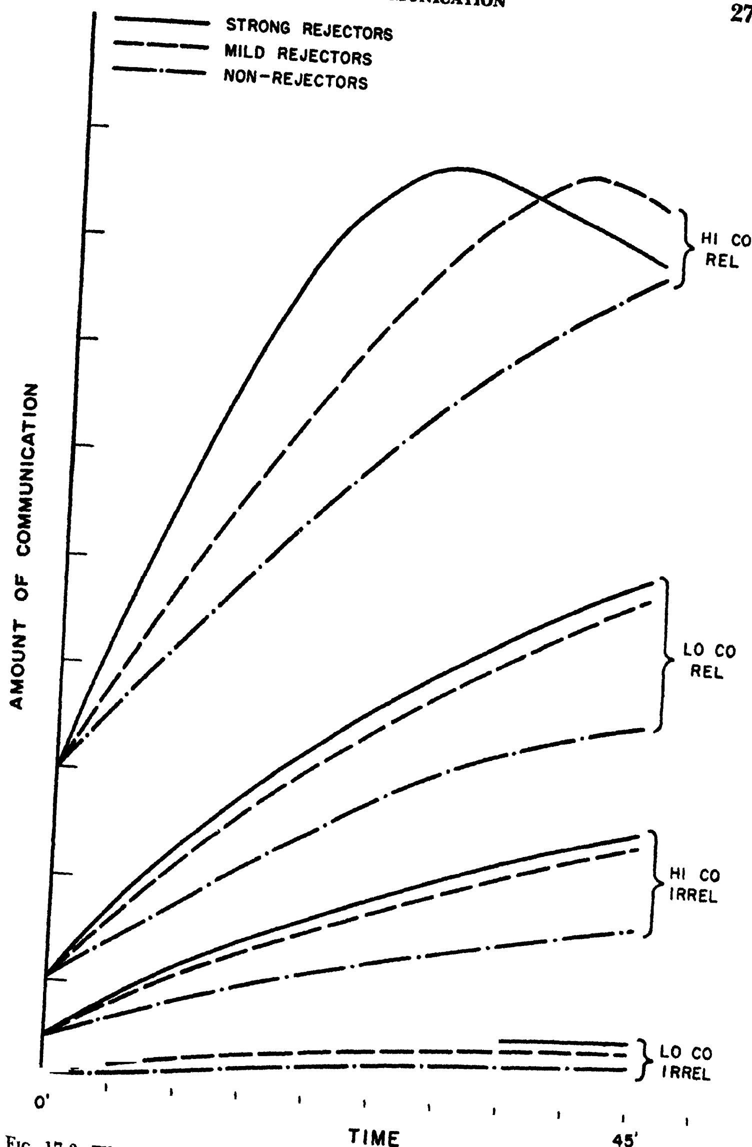


Fig. 17.3. Theoretical curves of communications from strong rejectors, mild rejectors, and non-rejectors to the deviate in the four experimental conditions.

munication that will be addressed to the deviate at a particular time in the course of the meeting by either the people who reject him strongly, reject mildly, or do not reject. All curves start slightly above the zero point, for it seems likely that even at the beginning of a meeting there is some perception of difference.

In the Hi Co Rel condition, the communication curve of non-rejectors increases continuously throughout the meeting. The curve of strong rejectors reaches a peak during the meeting and then declines continuously; and the mild rejectors' curve reaches a peak somewhat later and then declines. In all other conditions, all communication curves to the deviate rise continuously throughout the meeting.

The data testing these derivations are presented in Table 17.7. The meeting is here divided into 10-minute intervals and communications to the deviate during each interval tallied. The three categories of rejectors are determined by sociometric rankings of the deviate. Non-rejectors ranked the deviate from 1.0–3.72, mild rejectors from 4.0–7.92, and strong rejectors between 8 and 9. The figures in the table represent the total number of communications in each time interval made by all people in each rejector category, divided by the number of people in this category.

Let us examine first the data for the Hi Co Rel groups in Table 17.7. The strong rejectors reach their peak of communication to the deviate in the 15–25 minute interval and then decline steadily. The difference between the peak interval and the final time interval is significant at better than the 1% level.[11] Mild rejectors reach their peak somewhat later, in the 25–35 minute interval, and then decline. The difference between this peak and the final time interval is significant at the 3% level. Non-rejectors seem to reach a peak and then decline, but this difference is due entirely to one case and is significant at exactly the 50% level of confidence. The data, then, essentially parallel theoretical expectations.

In the other experimental conditions, the theory anticipates a steady rise in the number of communications addressed to the deviate by either mild, strong, or non-rejectors. The remaining data in Table 17.7 indicate that this is essentially correct. In six of these nine breakdowns, the number of communications to the deviate rises continuously, and differences between the last two time intervals are significant at the 12% level or better for all but the rising Lo Co Irrel curves. In three cases (non-rejectors in Lo Co Rel and Lo Co Irrel, mild rejectors in the Hi Co Irrel) there is a slight drop in the final interval. None of these drops is significant.

[11] All of the levels of significance reported with this set of data were obtained by tabulating for each individual in each category whether or not the number of communications he had addressed to the deviate was higher in one time interval than in the interval with which it was being compared. Probabilities were then computed by means of binomial expansion.

The theoretical derivations seem as well corroborated as can be anticipated with the relatively small number of cases involved. Most of the curves rise, and the only significant declines are the predicted ones.

Communication Patterns to the Mode and Slider

The position of the mode on the scale of perceived difference in Figure 17.2 should be at zero, the point of no perceived difference between himself and most of the others in the group. At this point $Pch = 0$, and dependence is at a maximum. There should therefore be no communications to the mode during any meeting in any experimental condition. This conclusion, however, must be qualified by two considerations: (*a*) As a rule, most, but not all, of the members of any one club were at the modal position. There were slight differences, therefore, between the mode and a few members of the group. (*b*) A paid participant in the modal role was required to speak once every five minutes. Courtesy would probably demand an occasional response.

TABLE 17.8

MEAN NUMBER OF COMMUNICATIONS ADDRESSED TO THE MODE AND SLIDER DURING THE COURSE OF THE MEETING

GROUP	*N*	TIME INTERVAL IN MINUTES			
		5–15	15–25	25–35	35–45
Hi Co Rel					
Mode	53	0.13	0.06	0.06	0.10
Slider	53	0.53	0.55	0.21	0.17
Lo Co Rel					
Mode	50	0.06	0.10	0.14	0.22
Slider	50	0.30	0.20	0.20	0.20
Hi Co Irrel					
Mode	49	0.18	0.16	0.37	0.12
Slider	49	0.79	0.47	0.20	0.04
Lo Co Irrel					
Mode	46	0.14	0.15	0.13	0.45
Slider	46	0.72	0.63	0.41	0.30

We may anticipate, then, that the curve of communication to the mode in all experimental conditions should be a low straight line, parallel to the horizontal time axis. In Table 17.8, we see that this is the case. The figures in this table are computed on the same basis as those in the previous table. In all conditions only a very small number of communica-

tions were addressed to the mode at any time. Fluctuations from a straight line are all within the range of chance expectancy.

Theoretically, communications to the slider present a more complicated picture, for it is impossible to predict exactly the interaction between perceived difference and decreasing absolute difference. But it is reasonable to suggest that communications to the slider should be at about the same level as to the deviate until the slider makes his first shift, and then communications should gradually decrease until by the end of the meeting they are at about the same level for both the slider and the mode. The data presented in Table 17.8 essentially substantiate these expectations. About 15 minutes after the meeting started the slider shifted from position 7 to 5, and finally adopted the modal position between the 35- and 40-minute marks. In all experimental conditions, communications to the slider are at first considerably above the level of communication to the mode and then decline steadily to the level of the mode in the final time interval.[12]

The Frequency of Communication

From the theoretical considerations previously formulated, additional derivations can be made about the magnitude or absolute amounts of communication in each experimental condition. It may be predicted, from the curves of communication in Figure 17.3, that the amount of communication to the deviate will decrease from Hi Co Rel condition to Lo Co Rel to Hi Co Irrel to Lo Co Irrel. And, since the distribution of positions on the love-punishment scale is the same from condition to condition, it may also be anticipated that the mean amounts of communication for meetings, within each condition, will vary in the same order. The data collected with the present observation schedule are, however, inadequate to substantiate or disprove these derivations. It has been postulated that the magnitude of pressures to uniformity is greater on relevant than on irrelevant issues, in high than in low cohesive groups. These derivations will hold *only* for communications that arise from pressures to uniformity, and we can say nothing about communications that arise from other sources. However, people communicate for numberless reasons beyond that of restoring uniformity of opinion. It seems a reasonable assumption that the more irrelevant an issue, the greater will be the number of communications that have sources other than pres-

[12] In the first time interval, though the number of communications to the slider is considerably higher than that to the mode, comparison with Table 17.7 reveals that the number of slider-directed communications is consistently lower than that to the deviate. Probably this is an artifact of the slider role. In preparing to shift position, the slider probably tended to be somewhat less extreme and emphatic in his defense of position 7.

sures to uniformity. If this analysis of the differences between the discussions of relevant and irrelevant issues is correct, supporting evidence must be found in areas other than the directions and amounts of communication.

Differences between the communication process in relevant and irrelevant conditions are shown in Table 17.9. Communications in the relevant groups tended to be longer. Slightly more than 30% of all communications in the relevant groups were long communications (more than 30 seconds), and only 21% were long in the irrelevant condition.[13] In addition, discussion in these two conditions went at a different clip. There were far more interruptions in irrelevant than in relevant groups.[14] An interruption is defined as any attempt to break into a speech before it is completed. Oddly enough, in the face of the greater number of communications and the more rapid clip in irrelevant groups, there was a greater number of pauses in the discussions of the irrelevant groups. Though there was no systematic notation of pauses, the observer noted all particularly long, uncomfortable intervals when no one had anything to say. In short, there were marked differences in the character of discussion in the two conditions. Discussion in irrelevant groups might be characterized as cocktail party conversation—fast, brief, clipped, and in bursts; discussion in the relevant groups resembled the board meeting—slow, even-paced, long, and well considered.

TABLE 17.9

INTERRUPTIONS, PAUSES, PERSONAL REFERENCES, AND LONG COMMUNICATIONS IN ALL CONDITIONS

	Hi Co Rel	Lo Co Rel	Hi Co Irrel	Lo Co Irrel
Per cent long communications	28	33	25	17
Mean interruptions per meeting	67.71	29.86	78.71	82.00
Total pauses	1	1	3	7
Personal history references	18	14	5	8

Consistent with these characterizations of the process of the meeting are the additional data presented in Table 17.9 on the relative frequency of personal history references. Reference to personal history may be considered evidence of real involvement in the discussion. In relevant groups, there were more than two and a half times as many personal references

[13] This difference has a $t = 2.06$, which with 30 *d.f.* is significant at the 5% level.

[14] The difference between mean number of interruptions in relevant and irrelevant groups is significant at better than the .001 level of significance, with $t = 5.74$ for 30 *d.f.* These measures of interruption and length of communication are relatively independent. Rank order correlations between the two are only +.39 in the irrelevant condition and +.45 in the relevant condition.

as there were in irrelevant groups.[15] Not only were the discussions of the irrelevant groups more glib, but also apparently more superficial.

The marked differences in the manner of relevant and irrelevant groups indicate that communications in irrelevant groups resulted in good part from sources other than pressures to uniformity. The data, therefore, do not serve as an adequate test of the derivations concerning the relative amounts of communication in the various conditions.

Summary

A set of assumptions has been developed which defines the relationships of the constructs dependence and pressures to change, to cohesiveness, relevance, and state of opinion. Both communication and rejection have been coordinated to these constructs. Dependence defines the proportion of the pressures to change that can find public expression, and communication is defined as $Comm = Pch \times Dep$.

Rejection is coordinated to the amount of pressures to change which are not exerted and is defined as $Rej = Pch \times (1-Dep)$.

These coordinations and the assumptions defining Pch and Dep allow us to make a number of predictions as to the results of the experiment. Predictions about rejection and the evidence supporting them will be reviewed briefly.

1. *Persons in the mode and slider roles will be rejected less (if at all) than will persons in the deviate role.*

On both the sociometric and committee assignment measures there was no evidence that either the mode or slider was rejected. The deviate, on the other hand, was rejected in all experimental conditions except Lo Co Irrel. Where the magnitudes of both Dep and Pch are low, we anticipate relatively little rejection. Thus, in the Lo Co Irrel condition, the sociometric ranking of the deviate was only slightly above the mean, and he was not overnominated for the correspondence committee.

2. *With cohesiveness held constant, rejection will be greater in relevant groups than in irrelevant groups.*

On the committee assignment measure, the deviate was assigned to the Correspondence Committee to a far greater extent in the relevant groups than in the irrelevant groups.

Though sociometric rankings of the deviate are about the same for the relevant and irrelevant conditions, there is evidence from random sociometric rankings that the intensity of rejection is greater in the relevant than in the irrelevant conditions.

3. *With relevance held constant, rejection will be greater in high cohesive than in low cohesive groups.*

[15] The difference yields a t of 1.89, which with 30 *d.f.* is significant at the 8% level.

The mean sociometric ranking of the deviate was considerably higher in both high cohesive conditions than in the corresponding low cohesive conditions.

On the committee assignment measure the deviate was nominated to the Correspondence Committee to a greater extent in the Hi Co Irrel than in the Lo Co Irrel condition. There is no difference, however, between the Hi Co Rel and the Lo Co Rel conditions. This inconsistency may be explained in terms of the relative nature of the measure. Here, too, the intensity of rejection may be stronger in Hi Co Rel than in Lo Co Rel groups. There is no immediate evidence, however, to support this argument.

Predictions about patterns of communication follow:

1. In the Hi Co Rel condition, the amount of communication addressed to the deviate by non-rejectors should increase continuously throughout the meeting. Strong rejectors should reach a peak of communication during the meeting and then decline continuously, and mild rejectors should reach a peak somewhat later and then decline.

2. In all other experimental conditions, communications to the deviate from strong, mild, or non-rejectors should increase continuously throughout the meeting.

3. In all experimental conditions, there should be relatively few communications addressed to persons in the modal role, and no increase in communications during the meeting.

4. In all conditions, communications to the slider should decrease during the meeting as the slider shifts from a deviate to a modal position.

The data essentially substantiated all of these predictions. The theory leads to other predictions about the relative magnitudes of communication in each experimental condition. These derivations, however, hold only for communications arising from pressures to uniformity. Since in irrelevant conditions many communications arose from other sources, it is impossible to test these derivations.

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16

Informal Social Communication

Leon Festinger

This article is a statement of the theoretical formulations which have been developed in the process of conducting a program of empirical and experimental research in informal social communication. It has grown out of our findings thus far and is, in turn, guiding the future course of the research program. This program of research concerns itself with finding and explaining the facts concerning informal, spontaneous communication among persons and the consequences of the process of communication. It would seem that a better understanding of the dynamics of such communication would in turn lead to a better understanding of various kinds of group functioning. The theories and hypotheses presented below vary considerably in precision, specificity and the degree to which corroborating data exist. Whatever the state of precision, however, the theories are empirically oriented and capable of being tested.

Since we are concerned with the spontaneous process of communication which goes on during the functioning of groups we must first differentiate the variety of types of communication which occur according to the theoretical conditions which give rise to tendencies to communicate. It is plausible to assume that separating the sources or origins of pressures to communicate that may act on a member of a group will give us fruitful areas to study. This type of differentiation or classification is, of course, adequate only if it leads to the separation of conceptually clear areas of investigation within which communication can be organized into statable theoretical and empirical laws.

We shall here deal with those few of the many possible sources of pressures to communicate in which we have thus far been able to make theoretical and empirical progress. We shall elaborate on the theory for regarding them as giving rise to pressures to communicate and on specific

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hypotheses concerning the laws of communication which stem from these sources.

Pressures toward Uniformity in a Group

One major source of forces to communicate is the pressure toward uniformity which may exist within a group. These are pressures which, for one reason or another, act toward making members of a group agree concerning some issue or conform with respect to some behavior pattern. It is stating the obvious, of course, to say that these pressures must be exerted by means of a process of communication among the members of the group. One must also specify the conditions under which such pressures toward uniformity arise, both on a conceptual and an operational level, so that in any specific situation it is possible to say whether or not such pressures exist. We shall, in the following discussion, elaborate on two major sources of pressures toward uniformity among people, namely, social reality and group locomotion.

Social reality. Opinions, attitudes, and beliefs which people hold must have some basis upon which they rest for their validity. Let us, as a start, abstract from the many kinds of bases for the subjective validity of such opinions, attitudes, and beliefs one continuum along which they may be said to lie. This continuum we may call a scale of degree of physical reality. At one end of this continuum, namely, complete dependence upon physical reality, we might have an example such as this: A person looking at a surface might think that the surface is fragile or he might think that the surface is unbreakable. He can very easily take a hammer, hit the surface, and quickly be convinced as to whether the opinion he holds is correct or incorrect. After he has broken the surface with a hammer, it will probably make little dent upon his opinion if another person should tell him that the surface is unbreakable. It would thus seem that where there is a high degree of dependence upon physical reality for the subjective validity of one's beliefs or opinions, the dependence upon other people for the confidence one has in these opinions or beliefs is very low.

At the other end of the continuum where the dependence upon physical reality is low or zero, we might have an example such as this: A person looking at the results of a national election feels that if the loser had won, things would be in some ways much better than they are. Upon what does the subjective validity of this belief depend? It depends to a large degree on whether or not other people share his opinion and feel the same way he does. If there are other people around him who believe the same thing, then his opinion is, to him, valid. If there are not others who believe the same thing, then his opinion is, in the same sense, not valid. Thus where

the dependence upon physical reality is low, the dependence upon social reality is correspondingly high. An opinion, a belief, an attitude is "correct," "valid," and "proper" to the extent that it is anchored in a group of people with similar beliefs, opinions, and attitudes.

This statement, however, cannot be generalized completely. It is clearly not necessary for the validity of someone's opinion that everyone else in the world think the way he does. It is only necessary that the members of that group to which he refers this opinion or attitude think the way he does. It is not necessary for a Ku Klux Klanner that some northern liberal agree with him in his attitude toward Negroes, but it is eminently necessary that there be other people who also are Ku Klux Klanners and who do agree with him. The person who does not agree with him is seen as different from him and not an adequate referent for his opinion. The problem of independently defining which groups are and which groups are not appropriate reference groups for a particular individual, and for a particular opinion or attitude, is a difficult one. It is to some extent inherently circular since an appropriate reference group tends to be a group which does share a person's opinions and attitudes, and people tend to locomote *into* such groups—and *out of* groups which do not agree with them.

From the preceding discussion it would seem that if a discrepancy in opinion, attitude, or belief exists among persons who are members of an appropriate reference group, forces to communicate will arise. It also follows that the less "physical reality" there is to validate the opinion or belief, the greater will be the importance of the social referent, the group, and the greater will be the forces to communicate.

Group locomotion. Pressures toward uniformity among members of a group may arise because such uniformity is desirable or necessary in order for the group to move toward some goal. Under such circumstances there are a number of things one can say about the magnitude of pressures toward uniformity.

They will be greater to the extent that the members perceive that group movement would be facilitated by uniformity.

The pressures toward uniformity will also be greater, the more dependent the various members are on the group in order to reach their goals. The degree to which other groups are substitutable as a means toward individual or group goals would be one of the determinants of the dependence of the member on the group.

We have elaborated on two sources of pressure toward uniformity among members of groups. The same empirical laws should apply to communications which result from pressures toward uniformity irrespective of the particular reasons for the existence of the pressures. We shall

now proceed to enumerate a set of hypotheses concerning communication which results from pressures toward uniformity.

Hypotheses about Communication Resulting from Pressures toward Uniformity

Communications which arise from pressures toward uniformity in a group may be seen as "instrumental" communications. That is, the communication is not an end in itself but rather is a means by which the communicator hopes to influence the person he addresses in such a way as to reduce the discrepancy that exists between them. Thus we should examine the determinants of: (*a*) when a member communicates, (*b*) to whom he communicates and (*c*) the reactions of the recipient of the communication.

1. Determinants of the magnitude of pressure to communicate:

Hypothesis 1a. The pressure on members to communicate to others in the group concerning "item x" increases monotonically with increase in the perceived discrepancy in opinion concerning "item x" among members of the group.

Remembering that we are considering only communication that results from pressures toward uniformity, it is clear that if there are no discrepancies in opinion—uniformity already exists in the group—there will be no forces to communicate. It would be plausible to expect the force to communicate to increase rapidly from zero as the state of affairs departs from uniformity.

Hypothesis 1b. The pressure on a member to communicate to others in the group concerning "item x" increases monotonically with increase in the degree of relevance of "item x" to the functioning of the group.

If "item x" is unimportant to the group in the sense of not being associated with any of the values or activities which are the basis for the existence of the group, or if it is more or less inconsequential for group locomotion, then there should be few or no forces to communicate even when there are perceived discrepancies in opinion. As "item x" becomes more important for the group (more relevant), the forces to communicate when any given magnitude of perceived discrepancy exists should increase.

Corroborative evidence for this hypothesis is found in an experiment by Schachter (8) where discussion of the same issue was experimentally made relevant for some groups and largely irrelevant for others. It is clear from the data that where the discussion was relevant to the functioning of the group there existed stronger forces to communicate and to influence the other members. Where the issue is a relevant one, the members

make longer individual contributions to the discussion and there are many fewer prolonged pauses in the discussion.

Hypothesis 1c. The pressure on members to communicate to others in the group concerning "item x" increases monotonically with increase in the cohesiveness of the group.

Cohesiveness of a group is here defined as the resultant of all the forces acting on the members to remain in the group. These forces may depend on the attractiveness or unattractiveness of either the prestige of the group, members in the group, or the activities in which the group engages. If the total attraction toward the group is zero, no forces to communicate should arise; the members may as easily leave the group as stay in it. As the forces to remain in the group increase (given perceived discrepancies in opinion and given a certain relevance of the item to the functioning of the group), the pressures to communicate will increase.

Data from an experiment by Back (1) support this hypothesis. In this experiment, groups of high and low cohesiveness were experimentally created using three different sources of attraction to the group; namely, liking the members, prestige attached to belonging, and possibility of getting a reward for performance in the group activity. For each of the three types of attraction to the group, the more cohesive groups were rated as proceeding at a more intense rate in the discussion than the corresponding less cohesive groups. In addition, except for the groups where the attraction was the possibility of reward (perhaps due to wanting to finish and get the reward), there was more total amount of attempted exertion of influence in the highly cohesive groups than in the less cohesive groups. In short, highly cohesive groups, having stronger pressures to communicate, discussed the issue at a more rapid pace and attempted to exert more influence.

2. Determinants of choice of recipient for communications:

Hypothesis 2a. The force to communicate about "item x" to *a particular member* of the group will increase as the discrepancy in opinion between that member and the communicator increases.

We have already stated in Hypothesis 1a that the pressure to communicate in general will increase as the perceived nonuniformity in the group increases. In addition, the force to communicate will be strongest toward those whose opinions are most different from one's own and will, of course, be zero towards those in the group who at the time hold the same opinion as the communicator. In other words, people will tend to communicate to those within the group whose opinions are most different from their own.

There is a clear corroboration of this hypothesis from a number of studies. In the previously mentioned experiment by Schachter (8), the distribution of opinions expressed in the group was always as follows:

Most of the members' opinions clustered within a narrow range of each other while one member, the deviate, held and maintained an extremely divergent point of view. About five times as many communications were addressed to the holder of the divergent point of view as were addressed to the others.

In an experiment by Festinger and Thibaut (5) the discussion situation was set up so that members' opinions on the issue spread over a considerable range. Invariably 70%–90% of the communications were addressed to those who held opinions at the extremes of the distribution. The curve of number of communications received falls off very rapidly as the opinion of the recipient moves away from the extreme of the distribution. The hypothesis would seem to be well substantiated.

Hypothesis 2b. The force to communicate about "item x" to *a particular person* will decrease to the extent that he is perceived as not a member of the group or to the extent that he is not wanted as a member of the group.

From the previous hypothesis, it follows that communications will tend to be addressed mainly toward those with extreme opinions within the group. This does not hold, however, for any arbitrarily defined group. The present hypothesis, in effect, states that such relationships will apply only within *psychological* groups, that is, collections of people that exist as groups psychologically for the members. Communications will tend not to be addressed towards those who are not members of the group.

The study by Schachter (8) and the study by Festinger and Thibaut (5) both substantiate this hypothesis. In Schachter's experiment, those group members who do not want the person holding the extremely divergent point of view to remain in the group tend to stop communicating to him towards the end of the discussion. In the experiment by Festinger and Thibaut, when the subjects have the perception that the persons present include different kinds of people with a great variety of interests, there tends to be less communication toward the extremes in the last half of the discussion after the rejection process has had time to develop. In short, communication towards those with different opinions decreases if they are seen as not members of the *psychological* group.

Hypothesis 2c. The force to communicate "item x" to a particular member will increase the more it is perceived that the communication will change that member's opinion in the desired direction.

A communication which arises because of the existence of pressures toward uniformity is made in order to exert a force on the recipient in a particular direction; that is, to push him to change his opinion so that he will agree more closely with the communicator. If a member is perceived as very resistant to changing his opinion, the force to communicate to him decreases. If it seems that a particular member will be changed as the result of a communication so as to increase the discrepancy between

him and the communicator, there will exist a force not to communicate to him. Thus under such conditions there will be tendencies *not* to communicate this particular item to that member.

There is some corroboration for this hypothesis. In a face-to-face verbal discussion where a range of opinion exists, the factors which this hypothesis points to would be particularly important for those members whose opinions were near the middle of the range. A communication which might influence the member at one extreme to come closer to the middle might at the same time influence the member at the other extreme to move farther away from the middle. We might then expect from this hypothesis that those holding opinions in the middle of the existing range would communicate less (because of the conflict) and would address fewer communications to the whole group, attempting to influence only one person at a time.

A number of observations were conducted to check these derivations. Existing groups of clinical psychologists, who were engaging in discussions to reconcile their differences in ratings of applicants, were observed. Altogether, 147 such discussions were observed in which at least one member's opinion was in the middle of the existing range. While those with extreme opinions made an average of 3.16 units of communication (number of communications weighted by length of the communication), those with middle opinions made an average of only 2.6 units of communication. While those with extreme opinions addressed 38% of their communications to the whole group, those with middle opinions addressed only 29% of their communications to everyone.

3. Determinants of change in the recipient of a communication:

Hypothesis 3a. The amount of change in opinion resulting from receiving a communication will increase as the pressure towards uniformity in the group increases.

There are two separate factors which contribute to the effect stated in the hypothesis. The greater the pressure towards uniformity, the greater will be the amount of influence exerted by the communications and, consequently, the greater the magnitude of change that may be expected. But the existence of pressures toward uniformity will not only show itself in increased attempts to change the opinions of others. Pressures toward uniformity will also produce greater readiness to change in the members of the group. In other words, uniformity may be achieved by changing the opinions of others or by changing one's own opinions, or both. Thus we may expect that with increasing pressure towards uniformity there will be less resistance to change on the part of the members. Both of these factors will contribute to produce greater change in opinion when the pressure toward uniformity is greater.

There is evidence corroborating this hypothesis from the experiment by

Festinger and Thibaut (5). In this experiment three degrees of pressure towards uniformity were experimentally induced in different groups. Irrespective of which of two problems were discussed by the group, and irrespective of whether they perceived the group to be homogeneously or heterogeneously composed, the results consistently show that high pressure groups change most, medium pressure groups change next most, and low pressure groups change least in the direction of uniformity. While the two factors which contribute to this effect cannot be separated in the data, their joint effect is clear and unmistakable.

Hypothesis 3b. The amount of change in opinion resulting from receiving a communication will increase as the strength of the resultant force to remain in the group increases for the recipient.

To the extent that a member wishes to remain in the group, the group has power over that member. By power we mean here the ability to produce real change in opinions and attitudes, and not simply change in overt behavior which can also be produced by means of overt threat. If a person is unable to leave a group because of restraints from the outside, the group can then use threats to change overt behavior. Covert changes in opinions and attitudes, however, can only be produced by a group by virtue of forces acting on the member to remain in the group. Clearly, the maximum force which the group can successfully induce on a member counter to his own forces cannot be greater than the sum of the forces acting on that member to remain in the group. The greater the resultant force to remain in the group, the more effective will be the attempts to influence the member.

This hypothesis is corroborated by two separate studies. Festinger, Schachter, and Back (4) investigated the relationship between the cohesiveness of social groups in a housing project (how attractive the group was for its members), and how effectively a group standard relevant to the functioning of the group was maintained. A correlation of .72 was obtained between these two variables. In other words, the greater the attractiveness of the group for the members, the greater was the amount of influence which the group could successfully exert on its members, with the result that there existed greater conformity in attitudes and behavior in the more cohesive groups.

Back (1) did a laboratory experiment specifically designed to test this hypothesis. By means of plausible instructions to the subjects, he experimentally created groups of high and low cohesiveness; that is, conditions in which the members were strongly attracted to the group and those in which the attraction to the group was relatively weak. The subjects, starting with different interpretations of the same material, were given an opportunity to discuss the matter. Irrespective of the source of the attraction to the group (Back used three different types of attraction in both high

and low cohesive conditions), the subjects in the high cohesive groups influenced one another's opinions more than the subjects in the low cohesive groups. In short, the greater the degree of attraction to the group, the greater the amount of influence actually accomplished.

Hypothesis 3c. The amount of change in opinion resulting from receiving a communication concerning "item x" will decrease with increase in the degree to which the opinions and attitudes involved are anchored in other group memberships or serve important need satisfying functions for the person.

If the opinion that a person has formed on some issue is supported in some other group than the one which is at present attempting to influence him, he will be more resistant to the attempted influence. Other sources of resistance to being influenced undoubtedly come from personality factors, ego needs and the like.

Specific evidence supporting this hypothesis is rather fragmentary. In the study of social groups in a housing project by Festinger, Schachter, and Back (4), the residents were asked whether their social life was mainly outside the project or not. Of those who conformed to the standards of their social groups within the project, about 85% reported that their social life was centered mainly within the project. Less than 50% of those who did not conform to the standards of the project social group, however, reported that their social life was centered mainly in the project. It is likely that they were able to resist the influences from within the project when their opinions and attitudes were supported in outside groups.

The experiments by Schachter (8) and by Festinger and Thibaut (5) used the same discussion problem in slightly different situations. In the former experiment, subjects identified themselves and verbally supported their opinions in face-to-face discussion. In the latter experiment, the subjects were anonymous, communicating only by written messages on which the sender of the message was not identified. Under these latter conditions many more changes in opinion were observed than under the open verbal discussion situation, even though less time was spent in discussion when they wrote notes. This difference in amount of change in opinion is probably due to the ego defensive reactions aroused by openly committing oneself and supporting one's opinions in a face-to-face group.

4. Determinants of change in relationship among members:

Hypothesis 4a. The tendency to change the composition of the psychological group (pushing members out of the group) increases as the perceived discrepancy in opinion increases.

We have already discussed two of the responses which members of groups make to pressures toward uniformity; namely, attempting to influence others, and being more ready to be influenced. There is still a third response which serves to move toward uniformity. By rejecting those

whose opinions diverge from the group, and thus redefining who is and who is not in the psychological group, uniformity can be accomplished. The greater the discrepancy between a person's opinion and the opinion of another, the stronger are the tendencies to exclude the other person from the psychological group.

There is evidence that members of groups do tend to reject those whose opinions are divergent. In the study of social groups within a housing project, Festinger, Schachter, and Back (4) found that those who did not conform to the standards of their social group were underchosen on a sociometric test; that is, they mentioned more persons as friends of theirs than they received in return. Schachter (8) did an experiment specifically to test whether or not members of groups would be rejected simply for disagreeing on an issue. Paid participants in the groups voiced divergent or agreeing opinions as instructed. In all groups the paid participant who voiced divergent opinion on an issue was rejected on a postmeeting questionnaire concerning whom they wanted to have remain in the group. The same paid participants, when voicing conforming opinions in other groups, were not rejected.

Hypothesis 4b. When nonconformity exists, the tendency to change the composition of the psychological group increases as the cohesiveness of the group increases and as the relevance of the issue to the group increases.

We have previously discussed the increase in forces to communicate with increase in cohesiveness and relevance of issue. Similarly, these two variables affect the tendency to reject persons from the group for nonconformity. Theoretically, we should expect any variable which affected the force to communicate (which stems from pressures toward uniformity) to affect also the tendency to reject nonconformers in a similar manner. In other words, increases in the force to communicate concerning an item will go along with increased tendency to reject persons who disagree concerning that item.

The previously mentioned experiment by Schachter (8) was designed to test this hypothesis by experimentally varying cohesiveness and relevance in club groups. In this experiment the more cohesive groups do reject the nonconformer more than the less cohesive groups, and the groups where the issue is relevant reject the nonconformer more than groups where the issue is not very relevant to the group functioning. Those groups where cohesiveness was low and the issue was not very relevant show little, if any, tendency to reject the deviate.

Forces to Change One's Position in a Group

Another important source of forces to communicate are the forces which act on members of groups to locomote (change their position) in the group, or to move from one group to another. Such forces to locomote may

stem from the attractiveness of activities associated with a different position in the group or from the status of that position, or the like. Thus a new member of a group may wish to become more central in the group, a member of an organization may wish to rise in the status hierarchy, a member of a business firm may want to be promoted, or a member of a minority group may desire acceptance by the majority group. These are all instances of forces to locomote in a social structure.

It is plausible that the existence of a force acting on a person in a specific direction produces behavior in that direction. Where locomotion in the desired direction is not possible, at least temporarily, there will exist a force to communicate in that direction. The existence of a force in a specific direction will produce behavior in that direction. One such kind of behavior is communication. This hypothesis is not very different from the hypothesis advanced by Lewin (6) to account for the superior recall of interrupted activities.

An experiment by Thibaut (9) tends to corroborate this theoretical analysis. In his experiment he created two groups—one of high status and privileged, the other of low status and underprivileged. These two groups, equated in other respects, functioned together so that the members of the high status group could play an attractive game. The low status group functioned merely as servants. It was clear that forces were acting on the members of the low status group to move into the other group. As the privileged position of the high status group became clearer and clearer, the amount of communication from the low status team to the high status group increased. The number of communications from members of the high status group to the low status group correspondingly decreased. When, in some groups, the status and privilege relationship between the two teams was reversed toward the end of the experimental session, thus reducing the forces to locomote into the other group, the number of communications to that other group correspondingly decreased.

Further corroboration is found in a preliminary experiment, mainly methodologically oriented, conducted by Back *et al.* (2). In this experiment new items of information were planted with persons at various levels in the hierarchy of a functioning organization. Data on transmission of each of the items of information were obtained through cooperators within the organization who were chosen so as to give adequate coverage of all levels and all sections within it. These cooperators recorded all instances of communication that came to their attention. Of 17 acts of communication recorded in this manner, 11 were directed upwards in the hierarchy, four toward someone on the same level and only two were directed downwards. The existence of forces to move upward in such a hierarchical organization may be taken for granted. The great bulk of

the communications recorded went in the same direction as these forces to locomote.

In considering communication among members of differentiated social structures, it is important also to take into account restraints against communication.

Infrequent contact in the ordinary course of events tends to erect restraints against communication. It is undoubtedly easier to communicate a given item to a person whom one sees frequently, or to a person to whom one has communicated similar items in the past. The structuring of groups into hierarchies, social clusters, or the like, undoubtedly tends to restrict the amount and type of contact between members of certain different parts or levels of the group, and also undoubtedly restricts the content of the communication that goes on between such levels in the ordinary course of events. These restrictions erect restraints against certain types of communication.

There are some data which tend to specify some of the restraints against communication which do exist. In the study of the communication of a spontaneous rumor in a community by Festinger, Cartwright *et al.* (3), it was found that intimacy of friendship tended to increase ease of communication. Persons with more friends in the project heard the rumor more often than those with only acquaintances. Those who had few friends or acquaintances heard the rumor least often. At the same time, this factor of intimacy of friendship was not related to how frequently they relayed the rumor to others. In other words, it was not related to forces to communicate, but seemed to function only as a restraint against communicating where friendship did not exist.

There is also some evidence that the mere perception of the existence of a hierarchy sets up restraints against communication between levels. Kelley (7) experimentally created a two-level hierarchy engaging in a problem-solving task during which they could and did communicate within levels and between levels. Control groups were also run with the same task situation, but with no status differential involved between the two subgroups. There was more communication between subgroups under these control conditions than where there was a status differential involved.

It seems that, in a hierarchy, there are also restraints against communicating hostility upwards when the hostility is about those on upper levels. In the same experiment by Kelley there was much criticism of the *other group* expressed by both high status and low status members. The proportion of these critical expressions which are directed upward by the low status group is much less, however, than the proportion directed downward by the high status groups.

Emotional Expression

An important variety of communications undoubtedly results from the existence of an emotional state in the communicator. The existence of joy, anger, hostility, and the like seems to produce forces to communicate. It seems that communications resulting from the existence of an emotional state are consummatory rather than instrumental.

By an instrumental communication, we mean one in which the reduction of the force to communicate depends upon the effect of the communication on the recipient. Thus in communication resulting from pressures toward uniformity in a group, the mere fact that a communication is made does not affect the force to communicate. If the effect has been to change the recipient so that he now agrees more closely with the communicator, the force to communicate will be reduced. If the recipient changes in the opposite direction, the force to communicate to him will be increased.

By a consummatory communication, we mean one in which the reduction of the force to communicate occurs as a result of the expression and does not depend upon the effect it has on the recipient. Certainly in the case of such communications the reaction of the recipient may introduce new elements into the situation which will affect the force to communicate, but the essence of a consummatory communication is that the simple expression does reduce the force.

Specifically with regard to the communication of hostility and aggression, much has been said regarding its consummatory nature. The psychoanalytic theories of catharsis, in particular, develop the notion that the expression of hostility reduces the emotional state of the person. There has, however, been very little experimental work done on the problem. The previously mentioned experiment by Thibaut in which he created a "privileged-underprivileged" relationship between two equated groups has some data on the point. There is evidence that those members of the "underprivileged" groups who expressed their hostility toward the "privileged" groups showed less residual hostility toward them in post-experimental questionnaires. There is, however, no control over the reactions of the recipients of the hostile communications nor over the perceptions of the communicators of what these reactions were. An experiment is now in progress which will attempt to clarify some of these relationships with both negative and positive emotional states.

Summary

A series of interrelated hypotheses has been presented to account for data on informal social communication collected in the course of a num-

ber of studies. The data come from field studies and from laboratory experiments specifically designed to test the hypotheses.

Three sources of pressures to communicate have been considered:

1. Communication arising from pressures toward uniformity in a group. Here we considered determinants of magnitude of the force to communicate, choice of recipient for the communication, magnitude of change in recipient, and magnitude of tendencies to reject nonconformers.

2. Communications arising from forces to locomote in a social structure. Here we considered communications in the direction of a blocked locomotion, and restraints against communication arising in differentiated social structures.

3. Communications arising from the existence of emotional states. In this area data are almost completely lacking. Some theoretical distinctions were made, and an experiment which is now in progress in this area was outlined.

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17
Political Standards in Secondary Groups

Philip Converse and Angus Campbell

The distinctive voting patterns of certain large-scale groupings in the population suggest the presence of group standards and group influence. It has generally been recognized, for example, that members of business and labor organizations, Catholics, Jews, Negroes, and other ethnic groupings tend to show a characteristic bias toward one party or another at the polls. Since the members of each of these groupings share many of the same life experiences, there has been some question as to whether this distinctiveness of political behavior reflects only parallel responses to parallel experience, or is mediated by the group in a more active sense (2).

Current evidence concerning the more prominent of these secondary groups indicates that it is reasonable to treat them in terms of active group standards. This evidence is of two types. First, it may be shown that members of these groups remain distinctive in their partisanship when paired with nonmembers of similar background. For example, a union member is more likely to vote Democratic in the current era than the nonmember of equivalent occupation, education, income, religion, urban-rural residence, region, ethnic background, race, age, and the like. Except as some politically potent aspect of experience may escape our attention, we would conclude that life situation aside, the fact of group membership itself leads to differences in behavior.

Where the first line of evidence pits member against nonmember, the second depends on intragroup differences. In the 1948 study of voting conducted by Berelson, Lazarsfeld, *et al.*, in Elmira, New York, members of ethnic and religious groups of distinctive political coloration were asked questions designed to reveal the importance or valence which the group held for the individual. Suchman and Menzel (5) have shown that members who deemed the group important were more likely to vote "with the group" than were more indifferent members.

This chapter was prepared especially for this volume.

In our national study of the 1956 presidential election we asked Catholics, Jews, Negroes, and members of labor unions to respond to the following questions in terms of their group: [1]

Would you say you feel pretty close to (e.g., Negroes) in general or that you don't feel much closer to them than you do to other kinds of people?

How much interest would you say you have in how (e.g., Negroes) as a whole are getting along in this country? Do you have a good deal of interest in it, some interest, or not much interest at all?

Responses to these items were combined to form a scale indicating the degree to which the member identified with the group in question. Each group had a putative Democratic voting norm. As hypothesized, highly identified members were more likely to vote Democratic than the less strongly identified.

In both the 1948 and 1956 instances, the only apparent difference between group members was the nature of the relationship with the group. Yet in each case, this difference turned out to be associated with more or less distinctive partisan choice. The conclusion once again seems to be that the partisanship which characterizes these groups as aggregates are mediated in some manner by the group *qua* group.

There are further provocative aspects to the data. It is clear, for example, that some groupings are much more solidary in their support of a particular party than are other groupings likewise thought to have partisan voting norms. If comparable nonmembers are dividing their vote 50–50 between the two major parties, then the "Democratic" group which casts 85% of its votes for the Democratic party is more distinctive than the "Democratic" group which favors that party by only a 55–45 margin. We do in fact find wide differences of this sort in the degree to which groups vote distinctively.

It is apparent, too, that the partisan division of the vote among the highly identified members of certain groups departs more strongly from the vote division of the less identified members than is the case within other groups. In other words, the strength of relationship between identification and vote varies substantially from group to group. Among Catholics, for example, it is relatively low; among union members it is notably higher.

Furthermore, these "within-group" and "between-group" contrasts are correlated. Where a group is more distinctive by comparison with nongroup voters, it is likely to be the case as well that its members are more differentiated one from another in their voting choice as a func-

[1] This study, supported by a grant from the Rockefeller Foundation, was carried out at the Survey Research Center, University of Michigan. It involved a cross-section sample of 1,772 respondents, chosen by strict probability methods from all adult citizens living in private households in the United States.

tion of group identification. We may think of a continuum representing percentage Democratic of the two-party vote, on which we locate three or more points representing group members of varying strength of identification, along with some comparable set of nonmembers. If we compare continua of this sort constructed for several groups, the distances between the several points for one group will be small, while the analogous distances for another group will quite generally be larger. We may readily imagine forces emanating from the group which act to disperse these points along each continuum; and differences in distances from group to group may be taken to reflect differences in the strength of group forces operative on the membership.

It is our purpose in this paper to expand our view of the influence process to encompass these systematic differences. We may thereby cast further light on the familiar waxing and waning of partisan homogeneity within groups of this sort over time, while illuminating, at an individual level, the circumstances of deviation from group standards in this behavioral setting.

A Model for the Political Influence Situation

We are interested in the effects of a membership group upon the response of an individual toward the world of politics. Thus three elements —individual, group, and political world—are involved in the situation. Between these elements lie a triangle of relationships. Two of these involve the actor directly; we may consider the third leg, the relationship between the group and the world of politics, as having the properties which the actor perceives to exist. Logically, a proper understanding of the character of these relationships from member to member should permit us to account for the final partisan behavior of each. Let us therefore consider some of the specific properties of these relationships which we might measure and combine to form a system of explanatory variables.

The individual and the political world. We must recognize at the outset that group considerations aside, the individual is engaged in a set of ongoing reactions to the political process. Hence if we wished to predict the full response made by the membership of any grouping at the polls, our characterization of the relationship between the individual and politics would become elaborate indeed, involving many terms which have nothing to do with the specific group membership. The member is exposed to much political information not mediated by the group. If the party favored by the group is enveloped in scandal, this fact will make inroads on the valence it holds for the member. Similarly, a very attractive candidate proffered by the opposition cannot be written off as lightly as an unattractive one. In short, the events of politics affect the

member's reaction directly in some degree, independent of group standards. The group member does not make decisions in a psychological field limited to group forces any more than a nonmember makes decisions in a vacuum.

Our purpose here is not, therefore, to account for the total response of the individual member to current politics, but rather to account for the differences introduced in this response because the group impinges on his political evaluations. It is for this reason that we have referred above not simply to group voting, but to the "distinctiveness" of group voting. The difference is readily illustrated. Several national surveys conducted in 1956 showed that the Democratic vote for President among Catholics had dipped below a 50–50 split for the first time since relevant data had been collected. In one sense, Catholic voters had suddenly "turned" Republican. It was true that the distinctiveness of the Catholic vote had been waning; but it remained Democratic relative to the vote among non-Catholics even in 1956, and this residual distinctiveness merely formed another point on a declining trend which we have had the opportunity to watch since 1948. In absolute terms the Catholic vote became sharply more Republican in 1952 and 1956, as did the vote among virtually all prominent groupings of this sort. But the degree of partisan bias *attributable to the group* did not shift violently.

It is to recognize the individual's independent access to politics as well that we wish to measure distinctiveness as a deviation from a base-line provided by a "control group" of nonmembers whose life situations are equivalent. Catholics have tended to vote Democratic in times past, but so have other individuals of lower status. Is the Democratic bias in the Catholic vote an effect of active group mediation, or would Catholics have responded to lower status with the same increase in Democratic voting independent of their religious ties? This question may best be answered by gauging their distinctiveness relative to other voters *of equivalent status*. And, since status is not the sole aspect of life situation which affects partisan response, the control groups which we have constructed to assess group distinctiveness of vote take into account a variety of other dimensions as well.[2]

[2] Control groups were formed for each secondary grouping in the following fashion. Two variables whose interaction terms were known to be potent vis-a-vis partison behavior were controlled in a "precision" matching: region (South *vs.* non-South) and urban-rural residence (3 categories). For union members, occupation status (3 categories) was controlled in the precision sense as well. Within groups so defined looser "distribution" controls were used. Thus the control groups have the same distribution as the member groups on region of nativity (2 categories), urban-rural background (3), education (3), occupation (3), income (3), generations in the United States (2), and age (3). Finally, within each group the effect of other prominent secondary membership groups was equated: the Catholic control group had the same proportion of union members and Negroes as appeared among Catholics, etc. Disregarding redundant

The use of these control groups does not mean of course that life situations have no role in the group influence process. Quite to the contrary, the distinctive needs which arise because group members find themselves relegated to peculiar positions in the social structure may contribute substantially to the motive power of the group *qua* group. What is important for our purposes, however, is the fact that shared membership appears to lend a focus and direction to behavior which is less visible for nonmembers who exist under similar conditions and can be presumed to have similar needs. This focus and direction is an integral part of what we mean by "group influence."

If we estimate the distinctiveness of our several groups in this fashion, we find the largest deviation in a Democratic direction from a base-line set by a control group to occur in the case of Jewish respondents (a difference of proportions of 45%). Union members (20%), non-Southern Negroes (12%) and Catholics (3%) follow in descending order.[3] While these are crude estimates at best, the range of variation presented is substantial. It is our assumption that this variation reflects differences in the strength of group forces in the psychological field as members evaluate the political world in reaching a vote decision. The strength of these forces is some function of (*a*) the relationship of the individual to the group, and (*b*) the relationship of the group to the world of politics.

The individual and the group. A variety of research undertakings have lent weight to the proposition that individuals attracted to a group are more likely to conform to its standards. The findings cited above from the 1948 and 1956 voting studies may be taken as a special case of such a phenomenon. The items which we used to measure strength of member identification with the group clearly provide an assessment of the attractiveness or valence of the group for the member. While the term "identification" seems best suited for the groupings of interest here, any method of summarizing the valence which marks the individual-group relationship appears to help us in discriminating between group members who will follow or deviate from group standards.

By the same token, if "cohesiveness" refers to a summation of the attraction exerted by the group across its membership, then the relative

per cent deviations, the differences between proportions of group and nongroup controls distributed in the several categories employed was 1.2 per cent in the case of Catholics, 1.5 per cent for Jews, 1.9 per cent for union members, and for Negroes, where matching was difficult, 4.3 per cent. It might be noted that after the first precision controls had been applied and occupation was added, further variables created only trival fluctuation in the vote division of the control group.

[3] The Negro and Jewish groups are considerably smaller (*N*'s of 63 and 56 respectively) than the Catholic and union contingents (*N*'s of 253 and 373, respectively). Hence estimates for these groups are subject to greater sampling error. For the same reason, much of our intra-group analyses will be restricted to the union and Catholic groups.

cohesiveness of various groups can help to explain differences in their heterogeneity as voting "blocs." We chose items to measure group identification which might be applied to a variety of groups in order to facilitate such intergroup comparisons. The resulting distribution of member identifications which characterizes each group fits our intuitive preconceptions extremely well. Negroes, in a ferment over the problem of group advancement which was approaching the proportions of a nationalist movement, responded with almost unanimous warmth to our questions concerning group identification. Similarly, Jewish respondents, members of an ethnic community commonly considered to be "tightly-knit," showed almost the same strong cohesiveness. Union members were, more often than not, positively disposed to their organizations, but there was a notable reduction in the proportion of favorable responses to the group here by comparison with Negroes or Jews. Catholics, presumed to be nearing the end of an assimilation process which has gone on in this country for many decades, registered as somewhat less cohesive still.

The ordering of these groups in terms of relative cohesiveness bears fair resemblance to their ordering in terms of partisan distinctiveness in 1956. Jews show high distinctiveness in their vote, and are highly cohesive as well. Similarly, among our four groupings, Catholics are both least cohesive and least distinctive. Thus we get a sense that trends in the partisan solidarity of groups in the national electorate may be traced in some measure to the same mechanisms which have been subjected to examination in the laboratory with face-to-face groups.

However, the match between the two orderings is not perfect, suggesting that other variables are operative which deserve recognition in any full explanatory scheme. The distinctiveness of the Negro vote, for example, is much lower than its group cohesiveness would lead us to expect, even when we restrict our focus to Negroes residing outside the South. On the basis of independent knowledge of events surrounding the 1956 election, we might well conclude that the missing term here has to do with the character of group standards which are propagated. We know, for example, that Negro leadership was badly split in its political endorsements in the 1956 campaign. Adam Clayton Powell, the foremost legislator of his race on the national scene, bolted from a Democratic affiliation to recommend the election of the Republican candidate. At the same time, the National Association for Advancement of Colored People, the major formal organization representing the group, adopted a posture of watchful waiting during the campaign, with vague intimations of a Republican endorsement from the executive secretary. Meanwhile, visible Negro political leaders in other non-Southern cities tended to hew to the traditional Democratic choice in their public pronouncements. Along similar lines, although case numbers are small, we find in

our own trend data that the distinctiveness of the non-Southern Negro vote was almost cut in half between 1952 and 1956.

This case study instructs us to shift our attention from the relationship between member and group to that which the member perceives to exist between the group and the political world. Tentatively, we leave the individual-group leg of the triangle to be represented by the single estimate of member identification with the group. There are a number of directions in which the notion of a generalized group valence has been expanded (1), and such expansions might increase the explanatory significance of this portion of the system of variables. Nonetheless, it appears that we may enhance our understanding more rapidly by proceeding directly to the third leg of the triangular relationship.

The group and the world of politics. In a general way, we may characterize the relationship between the group and the world of politics in terms of the proximity which the individual perceives to exist between the two entities. This sense of proximity may be difficult to specify, for in many ways the world of politics is a poorly defined region. Phenomenologically, however, it does seem to have some vague boundaries. It is in this spirit, for example, that a person may decide "to go into politics"; a group should "stay out of politics"; or a public problem is "made a political issue."

The notion of proximity is closely akin to what Schachter (4) has treated as the "relevance" of a topic for a group. Yet it subsumes a manifold process which we shall wish to examine in greater detail. It is of particular importance in this setting because the secondary groupings which we are examining are not at core "political" groups. That is, the basic goals of these groups are not directly political. The labor union exists to force management to provide more liberally for the worker; the Catholic church exists for religious worship. Yet these groups are *more nearly* political than the American Bowling Congress, for example, because from time to time influential group members come to see political instruments as important for the attainment of certain group goals. How nearly political any given member perceives the group to be will affect the way in which he reacts to a particular political standard felt to emanate from the group.

Groups which take political positions frequently are likely to communicate a sense that they are more rather than less political groups. Similarly, the strength of the standards conveyed contributes to a perception of proximity between group and politics. Even where strong standards are frequently transmitted, however, there may be further barriers acting to compartmentalize the world of politics from the sphere of group activity. The member may perceive that political action is relevant for the accomplishment of group goals, yet he may have qualms about the

legitimacy of group intrusion in politics. There are cultural values bound up with beliefs about democracy and the individual which inveigh against such activity. Values of this sort might prevent a sense of proximity from developing whatever other conditions obtained.

Thus we would expect some of the residual differences in vote homogeneity not explained by cohesiveness to depend on such factors as the strength and clarity of the standards which have been emitted in the name of the group, their successful transmission to the membership, and the values held by members concerning the appropriateness of political standards for the group concerned.

The Strength of Emitted Standards

One of the anomalies evident as we compare the ordering of our groups on vote distinctiveness and cohesiveness has to do with the union vote. Union members do not appear greatly more cohesive than Catholics, yet they are much more distinctive in their voting. This difference is reflected in another manner as well. Within the set of union members, the degree of association between identification and vote is considerably higher than among Catholics.[4] Since this difference depends on contrasts in the behavior of more and less identified members within each group, it cannot be accounted for in terms of group identification itself, but must depend on variation elsewhere in the influence process.

There are quite obvious differences between Catholic and union groups in the clarity with which political standards are emitted. In the current era, partisan voting norms among Catholics are probably maintained by diffuse primary-group mechanisms at a mass level. Such mechanisms for influence may not be intrinsically weak, but they probably are rendered rather impotent as group cohesiveness decreases. In the union case, however, political standards are often vigorously propagated by leadership, both through public endorsements in the name of the group and through more elaborate communication to the rank and file.

The very diffuseness of norm emission among Catholics makes empirical test of these surmises difficult. Within the set of union members, however, communication channels are more readily tapped, and we know that there is a good deal of variation in the vigor with which clear political standards are disseminated.

In the degree that union political standards are propagated in published form, they tend to flow from one of three levels of a hierarchy: the local, the international, or the remains of the massive federations which were, in 1956, still visible despite the AFL-CIO merger. The federations

[4] A Kendall tau-beta rank-order correlation between identification and vote is .10 for Catholics, .24 for union members.

permit a first gross comparison. We would not hesitate long in labelling the CIO as the "more political" of the two federations, in terms of differences apparent during the period of schism. While these differences were declining in later years, the CIO leadership generally had emitted many more political standards more clearly, and had challenged directly the older norms against extension of union activities into political areas. National surveys during the 1940's and 1950's showed quite regularly that CIO members were 5–10% more Democratic in their vote than were AFL members. In 1956, at least, a contrast of the same magnitude remained even after differences in occupation status were controlled. At the level of the great federation, then, it seems to be true that the "more political" group shapes a more distinctive political response across its membership.

We know further that there are radically different approaches to the problem of politics from one international union to another. These contrasts tend to cut across the old AFL and CIO distinction in some degree, since there is a scattering of AFL unions which expend much effort in political activity, while some CIO internationals attempt relatively little.

To capture this variation in 1956 we analyzed the political content of the pre-election editions of the official journals from several dozen of the large internationals whose members fell into our sample. The differences from journal to journal were sharp, making classification quite simple. At one extreme, large portions of the journal were given over to the elections, with fervently partisan pro-Democratic materials in abundance. As the proportion of content devoted to the campaign decreased, the tone became less strident. Short factual accounts of the AFL-CIO endorsement of the Democratic ticket, with mild-mannered editorials indicating the importance of voting for "candidates favorable to labor," became typical fare. A number of other journals made no partisan comment at all, nor did they report endorsements by other related groups. Finally, the journal of one giant union, while making no endorsement, included a picture of the international president in a friendly moment with President Eisenhower.

We have no evidence that the union members involved drew their perceptions of group standards from these particular journals. But we assumed that these journals were representative of the political efforts of the internationals more generally. Whatever the actual channels of communication, it was found that members faithfully reflected differences in clarity of standard from international to international by their reports of how they thought leaders of their union would vote. Where standards were clear in the group publications, member perceptions of leader behavior were clear and unidirectional. Where no standards were

communicated, a much smaller proportion felt they knew how leaders would vote, and their guesses were less unanimously in a Democratic direction.

Within internationals where standards were most clear according to the content analysis of the journals, the vote division was 67% Democratic. This fell to 55% where standards were weaker, and then to 51% in the category where no standards were visible at all in the analysis of journals. In the final category, where there appeared to be a slight Republican standard, the vote was only 44% Democratic. Since the proportion of high identifiers across each of these categories varies within a range of nearly 3%, it cannot be argued that these differences result from stronger identifications held by members of more militant unions.

TABLE 1

THE RELATIONSHIP OF UNION IDENTIFICATION AND PRESIDENTIAL VOTE FOR UNION MEMBERS, BY STRENGTH OF GROUP STANDARDS

	Nature of International Union's Political Standard				
	I Strong, Democratic	II Weak, Democratic	III None	IV Weak, Republican	Total N
High Identification	81% (21)	66% (56)	59% (37)	43% (14)	128
Low Identification	50% (18)	42% (50)	41% (32)	45% (11)	111
Number of Cases	39	106	69	25	239
τ_b, Identification x Vote	+.33	+.25	+.18	−.02	

Note The entry in each cell indicates the per cent Democratic of the two-party vote for president in the 1956 election for the designated group. Numbers of cases involved in each proportion are indicated in parentheses below each entry. Rank-order correlation coefficients (tau-beta) between union identification and vote have been calculated for each category of political standard, and are entered in the bottom row.

However, group identification does play an interesting role in the situation. Table 1 gives some suggestion of the way in which these parts of the model—identification and strength of standards—combine as factors in the influence situation. As we see, there is little systematic variation in the behavior of the weakly identified in internationals of differing standards. It is among the highly identified that the character of group standards which are disseminated affects behavior. In other words, influence only appears with clarity when both identification and unequivocal standards are present in combination. If either is missing, the evidence for influence is weak indeed.

Table 1 is informative in other directions as well. We note, for example, that there is no sign here of any substantial negative influence or "boomerang" effect. If such effect were to occur, we would expect it to attain a maximum among the least identified where standards have greatest strength. However, the division of the vote in this cell is actually higher than among low identifiers under other conditions.

It is true furthermore that while there is little evidence of the effects of standards among low identifiers in terms of Table 1, these persons are more likely to vote Democratic than nonunion people of similar life situation. We must remember that in examining the strength of standards emitted by organs at the level of the international union, we are capturing only a portion of the group standards to which union members are exposed. A Democratic endorsement by the newly merged AFL-CIO could be conceived as adding a broad force in the Democratic direction for members of all unions under its jurisdiction. Further effects of this sort may occur at the level of the local even within internationals which tend to avoid partisan commitment. And finally, we must suppose that there is influence as well at the primary-group level. Pressures here would produce a visible partisan bias in the vote of union people weakly identified with the union or members of neutral internationals to the degree that such persons were influenced by companions who happened to be more strongly identified or members of more militant unions.

Festinger, Schachter and Back (3), in their study of college housing units, were forced to assume that a relationship between the cohesiveness and behavioral homogeneity of subunits guaranteed the presence of group norms, which could not be measured directly. Although the units in Table 1 are somewhat different, the coefficients entered at the bottom of the table lend weight to this assumption. The strength of the relationship between identification and vote varies with the strength of emitted standards which we have measured. This statistic is convenient for our further use, as it reveals variation in behavior which is, on the one hand, group-based, yet which is relatively independent of variation in identification on the other. While we cannot be sure that the differences it captures are due only to the *strength* of emitted standards, we do see that variation in strength of standard produces a gradient in the identification-vote relationship.

In these terms, it seems reasonable to assume that the weaker association between identification and vote which we have noted in the Catholic case does spring from standards which are less clear and strong than they are for many union members. The same chain of reasoning accounts for the much lower distinctiveness of the Catholic vote, despite a cohesiveness not unlike that of union groupings.

Other simple group cues as political standards. We may approach the

matter of the Catholic vote from another point of view. For if Catholic standards are weak in terms of partisan loyalty toward a presidential candidacy, we can find cases in which group standards for Catholics could be expected to be much clearer.

Thus far we have considered only cases in which successful transmission of standards requires some relatively elaborate communication: at least a verbal endorsement, and normally some further persuasion. When one of the candidates is cognized as a group member, however, the behavior appropriate for loyal members is apparent without further need for communication. We can examine the effects of this classic gambit of nominating conventions in the vote of Catholics for legislative seats involving contests between a Catholic and a non-Catholic.

These split-religion races do reveal a more distinctive Catholic vote than has been apparent at the presidential level, despite the fact that support of a Catholic nominee at times requires the loyal member to depart from the "normal" Democratic preference to vote for a Republican.[5] Of course no group effect would be expected save where there is actual recognition of the group affiliation of the candidate. We know that as a general rule voters are rather uninformed about the senatorial and congressional candidates for whom they vote. Of course in the case of ethnic groupings, the name of the candidate on the ballot may in itself be sufficient to indicate group membership. But if we restrict our comparisons to the set of respondents able to recall the name of the candidate for whom they have voted, we should be focussing upon individuals most likely to be aware of the group affiliation of the candidate. And indeed, the group effect, quite visible without this intensifying device, is thereby dramatized considerably (Table 2).

If the distinctiveness of the Catholic vote *for President* is so small as to create the impression of a politically impotent group, differences in Table 2, although based on fewer cases than we would like, are large enough to challenge any sweeping conclusion of this order. Therefore it is worthwhile to reflect upon some of the generic differences between the two situations.

The most obvious distinction springs from the fact that the 1956 presidential race studied did not pit group member against nonmember, while the congressional races were chosen precisely on this basis. We would expect a much firmer equation of political object with group interest where the object is part of the group than where the group merely extends some kind of endorsement to a party or a nonmember candidate. Secondly, the pairing of member and nonmember in the competition for office in itself makes the group basis for choice more salient. This fact

[5] The fact that "good" Catholics appear as candidates under a Republican label in itself helps to break down the sense of a unique group tie with the Democratic party.

becomes more critical in view of the extremely limited information which appears to underlie most political decisions in the mass electorate. Lack of knowledge about legislative candidates is simply a case in point. Where ethnic background or religion is suggested by the surname of the candidate, this datum, along with the candidate's party affiliation, may exhaust the information brought to bear on partisan choice by substantial proportions of the public. In these cases, the question posed by the ballot is in effect: "Other things equal, would you prefer a member of your own

TABLE 2

THE VOTE OF CATHOLICS FOR CATHOLIC CANDIDATES WHOSE NAMES CAN BE RECALLED, IN RACES INVOLVING NON-CATHOLICS

	Catholic Identification		
	High	Low	Total Group
U. S. House of Representatives			
Catholic Voters	85% (13)	69% (13)	77% (26)
Catholic Control	—		51% (25)
U. S. Senate			
Catholic Voters	86% (22)	57% (28)	70% (50)
Catholic Control	—	---	49% (47)

The per cent entry refers to the proportion of the indicated group who voted for the Catholic candidate in the split-religion congressional or senatorial race. The figure in each parenthesis indicates the number of cases involved in each proportion.

group to a nonmember?" In the degree that such a situation obtains, it is likely that the group effects which we observe in these instances are virtually maximized.

It should be recognized also that Table 2 is restricted to those voters most likely to cognize the candidate's group affiliation. A parallel table including all Catholic voters shows group candidates favored by a 12% increment over the proper control group, as opposed to the increment of 20–25% in Table 2. We take this to mean that group effects are muted in this voting situation simply because some members lack the information necessary to recognize the relevance of group standards. As might be expected, this problem is at least equally acute where standards are less self-evident. The fact that strong standards are emitted certainly raises the probability that some standard will be perceived; but it does not ensure reception, and failures at this point further limit the operation of influence in the political setting.

The Reception of Emitted Standards

In the social groupings under consideration, the transmission of uniform political standards to a far-flung membership is a precarious process. This is bound to be true if leadership is decentralized or if propagation depends upon primary-group diffusion. But even in the union case, where channels of communication for political materials are clear-cut and much effort is devoted in some quarters to the problem of communicating political standards, there is good evidence that influence is circumscribed because portions of the membership simply fail to absorb information concerning group political standards.

Unfortunately, it is difficult to measure the cognizance of norms on the part of the member directly. In times past we have asked group members before the election whether they would predict any predominant direction in the vote of their leadership or of other members. For some uses responses to these items are illuminating. But there is internal evidence that such reports are clouded by various types of distortion. The identified member who for other reasons wishes to cast a vote against the prevailing group standard may inhibit recognition that any standard exists; the poorly identified member who is unaware of any particular standard may simply project his own intentions on the group. Since it seems clear that such distortions will occur under certain critical combinations of identification and vote intention, we are not comfortable in using these responses to cast light on variations in identification and vote.

However, we feel more confident employing these reports to validate factors which we might suppose would affect reception of standards, yet which should, by and large, cross-cut any effects due to distortion. We would hypothesize in the union case, for example, that group standards would be least evident for poorly educated members and for those whose term of membership in a union had been most brief. We know that low education means relatively slight interest and involvement in politics, and general lack of information concerning prominent political issues of the day. It also means a higher dependence upon radio and television than upon the written word as a source of political information, if indeed any mass medium is monitored at all. If the reception of an emitted standard is a probability matter, then the individual exposed to many emissions is more likely to have absorbed the message than one exposed to few emissions. The same rationale would lead to the prediction that long-term members would be more apt to cognize group standards than new arrivals.

We do in fact find sharp variation in the clarity with which standards are reported to be perceived, as a function of both education and length

of membership (Table 3). Furthermore, the correlation between identification and vote, entered around both margins of the table, show precisely the type of co-variation with each of these factors which we would demand as evidence of change in influence phenomena. These gradients of relationship associated with education and length of membership closely resemble the gradient which we discovered as a function of strength of emitted standards. However, it does not appear that they are merely derivatives or artifacts of the previous gradient, as might be the case if militant unions had memberships of longer standing and higher

TABLE 3

RECOGNITION OF UNION POLITICAL STANDARDS AS A FUNCTION OF EDUCATION AND LENGTH OF UNION MEMBERSHIP

LENGTH OF UNION MEMBERSHIP	EDUCATION			T_b, UNION IDENTIFICATION x VOTE
	Grade School	High School	College *	
4 years or less	40% (20)	49% (35)	64% (22)	+.01
5–9 years	56% (16)	69% (36)		+.09
10 years or over	60% (48)	80% (60)		+.34
T_b, Union Identification x Vote	+.15	+.22	+.35	

Note. The per cent entry in each cell refers to the proportion of the indicated group which perceives the union leadership as behaving in some predominant partisan direction. The remaining respondents indicated either that they did not know how the leadership stood in partisan terms for the 1956 election, or thought that leadership would be "about evenly split" between the parties. Figures in parentheses indicate the number of cases involved in each proportion. The rank-order correlation coefficients are comparable to those employed in connection with Table 1.

* The number of college-educated people who are union members is too few for further subdivision. In a rough way, the college entry is placed appropriately on the continuum indicating length of union membership. That is, average length of membership is considerably lower here than is the case within the other education categories.

education. Actually, differences in mean education or length of membership across internationals of differing political standards are small at best. But to the degree that differences are present, they run in the opposing direction: internationals with stronger standards have more poorly educated members who are, on the average, of more recent vintage. Thus if we had sufficient cases to examine these several gradients within the same table, we would expect each to be more rather than less steep.

In predicting that perception of standards would increase as a function of education, we relied in part upon independent knowledge that more educated citizens are more apt to draw upon written communica-

tions for political information than audiovisual media such as radio or television. Aside from direct personal confrontation which may arise in some union situations, the transmission of political standards in the union case is likely to rest much more heavily upon the written word than upon radio or television presentation. Furthermore, people who depend primarily on newspapers and magazines for political information do tend to receive messages from radio and television as well, while persons depending on radio and television are much less likely to supplement their information from printed sources. Thus dependence upon newspapers and magazines is posited as an intervening mechanism whereby more educated people, if highly identified as well, become more apt to respond to group standards.

TABLE 4

THE ROLE OF MASS MEDIA AND EDUCATION IN THE RELATIONSHIP BETWEEN IDENTIFICATION AND VOTE AMONG UNION MEMBERS

MOST IMPORTANT MASS MEDIA FOR POLITICAL NEWS	EDUCATION		
	Grade School	High School	College
Newspapers and magazines	.16 (21)	.37 (73)	.45 (18)
Radio and television	.19 (72)	.17 (112)	.41 (18)

Note The entry in each cell is a coefficient of correlation (T_b) between union identification and the Presidential vote of the union member The number of cases involved in the coefficient is indicated in parentheses

Data are arrayed in Table 4 to show that while education and type of media consumption are related for union members, each factor makes some independent contribution to an intensification of the identification-vote relationship. The independent role of the mass media appears trivial among grade school and college people, but quite substantial within the high-school category, where the bulk of the cases are concentrated. The evidence that both factors make an independent contribution to variation in the identification-vote relationship raises our confidence that we properly interpret these patterns as steps in a process, rather than spurious co-variation arising from the other independent variable (education or media consumption) as a "third factor."

In short, then, a number of pieces of evidence suggest that the influence process is partially undermined in the union case by failure of identified members to recognize emitted political standards. We may suppose that if political messages were more carefully attended, newer union members would become aware of standards more rapidly, and poorly

educated members would show a higher recognition of such standards. In such an event, we would expect the more identified persons within these categories to respond to standards with greater clarity than is now the case.

The Legitimacy of Group Political Standards

Even where clear standards are successfully received by a membership, we have suggested that there may be resistance on value grounds against group intrusion upon political decision-making. Since the most

TABLE 5

PRESIDENTIAL VOTE ACROSS FOUR SECONDARY MEMBERSHIP GROUPS, BY STRENGTH OF GROUP IDENTIFICATION AND BELIEF IN LEGITIMACY OF GROUP POLITICAL ACTIVITY

Belief in Legitimacy of Group Political Activity	Group Identification			Total
	High	Medium	Low	
Strong	72% (126)	64% (95)	55% (98)	65% (319)
Medium	62% (52)	55% (55)	45% (56)	53% (163)
Weak	67% (27)	45% (60)	33% (127)	41% (214)
Total	69% (205)	56% (210)	43% (281)	—

Note: Each cell entry represents the per cent Democratic of the two-party vote for the appropriate combination of group identification and sense of legitimacy. The "Total" column shows the simple relationship between legitimacy and the vote, with no control on identification. The "Total" row shows the simple relationship between identification and the vote, without control on legitimacy

obvious goals of these groups are not primarily political, a member may espouse these goals fervently without feeling that it is legitimate for political instrumentation to be sought.

In 1956 we asked the members of our several groups whether or not they felt it was "all right" for organizations representing the group to support relevant legislative proposals and candidates for office. The responses to these questions showed a fairly strong relationship with the group identification variable in a direction which would seem to match theoretical expectations. That is, we would expect a person who is more absorbed in a group to accord it broader jurisdiction than one who is less enthusiastic about his membership.

With identification controlled, however, there remains a substantial relationship between beliefs concerning the legitimacy of group political standards and conformity to group norms across all of the groupings analyzed (Table 5). It is undoubtedly true that in some measure the beliefs of members as to the legitimacy of standards will be affected by perceived congruence of own and group political predispositions. In other words, a sense of legitimacy could be an effect, rather than a cause, of acceptance of the group position in politics.

Of course our data do not permit us to sort out these cases or estimate their contribution to the relationship portrayed in Table 5. Nevertheless, we feel that in some part at least we are tapping a set of beliefs which have independent causal status in the influence process. The pattern of correlates on the legitimacy responses are encouraging in this regard. For example, within each level of group identification, members of the two religious groups—Catholics and Jews—show much greater reluctance to accept the legitimacy statements than either of the two secular groupings. This suggests that our questions capture some appropriate underlying value structures, since taboos designed to insulate the political process from outside group pressures have been strongest where religious groupings have been concerned. Also, with identification controlled, there is somewhat less readiness to grant legitimacy among older people. This conforms with impressions that popular values opposing frank interest-group politics represent an older America.

Thus while Table 5 undoubtedly overstates the independent status of concern with legitimacy in inhibiting conformity, it seems that such concerns must be taken into account in any full assessment of the influence process in this setting.

Summary

We have attempted to explore a variety of aspects of the group influence process, as it operates in the formation and erosion of voting blocks within secondary membership groupings in the national electorate. We cannot test elements of the model which has been sketched above against the observed behavior of our several groups in any rigorous fashion. But we have some sense that it increases our understanding of the reasons which underlie differences in the distinctiveness of vote across our several groups.

On many counts, the Negro community appears most ripe in the current period for political influence in the name of the group. Its cohesiveness is extremely high. The legitimacy of group activity in politics goes almost unquestioned. Its primary deficit lies in the impoverished education of group members, a fact which may in some degree disrupt the

transmission of political standards despite high levels of group motivation. However, conflicting leadership standards appear to have reduced the efficiency of the group as a national voting bloc in the 1956 election.

Similar cohesiveness among Jewish people may permit high distinctiveness of the group vote when group standards are clear. In this case, the high level of education within the group facilitates the transmission of standards, although there are greater reservations felt by group members about the role of the group in politics than in the case for Negroes.

The union grouping is more cohesive than the Catholic, but the difference is slight. Nevertheless, the transmission of standards for union members is much more persistent and obvious, despite telling variation over the total labor movement. And there is a general willingness on the part of union members to accept group activity in politics which is clearly lacking among Catholics. The result is a much more distinctive group vote in the union case, although the evidence suggests that distinctiveness could be greater if stronger standards were expressed and their transmission rendered more effective.

We can expect that a number of these group characteristics which appear critical in terms of the model will shift over time. Continuing observation of the magnitude of group effects as they vary in response to such change should give us an increasingly firm understanding of the dynamics of the influence process, with its many potentialities and limitations, as it occurs in this field setting.

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18
Overcoming Resistance to Change

Lester Coch and John R. P. French, Jr.

It has always been characteristic of American industry to change products and methods of doing jobs as often as competitive conditions or engineering progress dictates. This makes frequent changes in an individual's work necessary. In addition, the markedly greater turnover and absenteeism of recent years result in unbalanced production lines, which again makes for frequent shifting of individuals from one job to another. One of the most serious production problems faced at the Harwood Manufacturing Corporation has been the resistance of production workers to the necessary changes in methods and jobs. This resistance expressed itself in several ways, such as grievances about the piece rates that went with the new methods, high turnover, very low efficiency, restriction of output, and marked aggression against management. Despite these undesirable effects, it was necessary that changes in methods and jobs continue.

Efforts were made to solve this serious problem by the use of a special monetary allowance for transfers, by trying to enlist the cooperation and aid of the union, by making necessary layoffs on the basis of efficiency, etc. In all cases, these actions did little or nothing to overcome the resistance to change. On the basis of these data, it was felt that the pressing problem of resistance to change demanded further research for its solution. From the point of view of factory management, there were two purposes to the research: (*a*) Why do people resist change so strongly? and (*b*) What can be done to overcome this resistance?

Starting with a series of observations about the behavior of changed groups, the first step in the program was to devise a preliminary theory to account for the resistance to change. Then, on the basis of the theory, a real-life action experiment was devised and conducted within the context of the factory situation. Finally, the results of the experiment were interpreted in the light of the preliminary theory and the new data.

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Background

The main plant of the Harwood Manufacturing Corporation, where the present research was done, is located in the small town of Marion, Virginia. The plant produces pajamas and, like most sewing plants, employs mostly women. The plant's population is about 500 women and 100 men. The workers are recruited from the rural, mountainous areas surrounding the town, and are usually employed without previous industrial experience. The average age of the workers is 23. The average education is eight years of grammar school.

The policies of the company in regard to labor relations are liberal and progressive. A high value has been placed on fair and open dealing with the employees and they are encouraged to take up any problems or grievances with the management at any time. Every effort is made to help foremen find effective solutions to their problems in human relations, using conferences and role-playing methods. Carefully planned orientation, designed to help overcome the discouragement and frustrations attending entrance upon the new and unfamiliar situation, is used. Plant-wide votes are conducted where possible to resolve problems affecting the whole working population. The company has invested both time and money in employee services such as industrial music, health services, lunchroom, and recreation programs. In the same spirit, the management has been conscious of the importance of public relations in the local community; they have supported, both financially and otherwise, any activity which would build up good will for the company. As a result of these policies, the company has enjoyed good labor relations since the day it commenced operations.

Harwood employees work on an individual incentive system. Piece rates are set by time study and are expressed in terms of units. One unit is equal to one minute of standard work: 60 units per hour equal the standard efficiency rating. Thus, if on a particular operation the piece rate for one dozen is 10 units, the operator would have to produce six dozen per hour to achieve the standard efficiency rating of 60 units per hour. The skill required to reach 60 units per hour is great. On some jobs, an average trainee may take 34 weeks to reach the skill level necessary to perform at 60 units per hour. Her first few weeks of work may be on an efficiency level of 5 to 20 units per hour.

The amount of pay received is directly proportional to the weekly average efficiency rating achieved. Thus, an operator with an average efficiency rating of 75 units per hour (25% more than standard) would receive 25% more than base pay. However, there are two minimum wages below which no operator may fall. The first is the plant-wide minimum, the hiring-in wage; the second is a minimum wage based on six months'

employment and is 22% higher than the plant-wide minimum wage. Both minima are smaller than the base pay for 60 units per hour efficiency rating.

The rating of every piece worker is computed every day, and the results are published in a daily record of production which is shown to every operator. This daily record of production for each production line carries the names of all the operators on that line arranged in rank order of efficiency rating, with the highest rating girl at the top of the list. The supervisors speak to each operator each day about her unit ratings. Because of the above procedures, many operators do not claim credit for all the work done in a given day. Instead, they save a few of the piece rate tickets as a "cushion" against a rainy day when they may not feel well or may have a great amount of machine trouble.

When it is necessary to change an operator from one type of work to another, a transfer bonus is given. This bonus is so designed that the changed operator who relearns at an average rate will suffer no loss in earnings after change. Despite this allowance, the general attitudes toward job changes in the factory are markedly negative. Such expressions as, "When you make your units [standard production], they change your job," are all too frequent. Many operators refuse to change, preferring to quit.

The Transfer Learning Curve

An analysis of the after-change relearning curves of several hundred experienced operators rating standard or better prior to change showed that 38% of the changed operators recovered to the standard unit rating of 60 units per hour. The other 62% either became chronically substandard operators or quit during the relearning period.

The average relearning curve for those who recover to standard production on the simplest type of job in the plant is eight weeks long, and, when smoothed, provides the basis for the transfer bonus. The bonus is the percentage difference between this expected efficiency rating and the standard of 60 units per hour.

The relearning period for an experienced operator is longer than the learning period for a new operator. This is true despite the fact that the majority of transfers—the failures who never recover to standard—are omitted from the curve. However, changed operators rarely complain of "wanting to do it the old way" after the first week or two of change, and time and motion studies show few false moves after the first week of change. From this evidence it is deduced that proactive inhibition, or the interference of previous habits in learning the new skill, is either nonexistent or very slight after the first two weeks of change.

An analysis of the relearning curves for 41 experienced operators who were changed to very difficult jobs gives a comparison between the recovery rates for operators making standard or better prior to change, and those below standard prior to change. Both classes of operators dropped to a little below 30 units per hour and recovered at a very slow but similar rate. These curves show a general (though by no means universal) phenomenon: the efficiency rating prior to change does not indicate a faster or slower recovery rate after change.

A Preliminary Theory of Resistance to Change

The fact that relearning after transfer to a new job is so often slower than initial learning on first entering the factory would indicate, on the face of it, that the resistance to change and the slow relearning is primarily a motivational problem. The similar recovery rates of skilled and unskilled operators tend to confirm the hypothesis that skill is a minor factor and motivation is the major determinant of the rate of recovery. Earlier experiments at Harwood by Alex Bavelas demonstrated this point conclusively. He found that the use of group decision techniques on operators who had just been transferred resulted in very marked increases in the rate of relearning, even though no skill training was given and there were no other changes in working conditions (3).

Interviews with operators who have been transferred to a new job reveal a common pattern of feelings and attitudes which are distinctly different from those of successful nontransfers. In addition to resentment against the management for transferring them, the employees typically show feelings of frustration, loss of hope of ever regaining their former level of production and status in the factory, feelings of failure, and a very low level of aspiration. In this respect, these transferred operators are similar to the chronically slow workers studied previously.

Earlier unpublished research at Harwood has shown that the nontransferred employees generally have an explicit goal of reaching and maintaining an efficiency rating of 60 units per hour. A questionnaire administered to several groups of operators indicated that a large majority of them accept as their goal the management's quota of 60 units per hour. This standard of production is the level of aspiration according to which the operators measure their own success or failure, and those who fall below standard lose status in the eyes of their fellow employees. Relatively few operators set a goal appreciably above 60 units per hour.

The actual production records confirm the effectiveness of this goal of standard production. The distribution of the total population of operators in accordance with their production levels is by no means a normal curve. Instead there is a very large number of operators who rate 60 to 63

units per hour, and relatively few operators who rate just above or just below this range. Thus we may conclude that:

Proposition 1. There is a force acting on the operator in the direction of achieving a production level of 60 units per hour or more. It is assumed that the strength of this driving force (acting on an operator below standard) increases as she gets nearer the goal—a typical goal gradient.

On the other hand, restraining forces operate to hinder or prevent her reaching this goal. These restraining forces consist, among other things, of the difficulty of the job in relation to the operator's level of skill. Other things being equal, the faster an operator is sewing the more difficult it is to increase her speed by a given amount. Thus we may conclude that:

Proposition 2. The strength of the restraining force hindering higher production increases with increasing level of production.

In line with previous studies, it is assumed that the conflict of these two opposing forces—the driving force corresponding to the goal of reaching 60 and the restraining force of the difficulty of the job—produces frustration. In such a conflict situation, the strength of frustration will depend on the strength of these forces. If the restraining force against increasing production is weak, then the frustration will be weak. But if the driving force toward higher production, i.e., the motivation is weak, then the frustration will also be weak. Probably both of the conflicting forces must be above a certain minimum strength before any frustration is produced, for all goal-directed activity involves some degree of conflict of this type; yet a person is not usually frustrated so long as he is making satisfactory progress toward his goal. Consequently we assume that:

Proposition 3. The strength of frustration is a function of the weaker of these two opposing forces, provided that the weaker force is stronger than a certain minimum necessary to produce frustration (3).

From Propositions 1, 2, and 3, we may derive that the strength of frustration (*a*) should be greater for operators who are below standard in production than for operators who have already achieved the goal of standard production; (*b*) should be greater for operators on difficult jobs than for operators on easy jobs; and (*c*) should increase with increasing efficiency rating below standard production. Previous research would suggest:

Proposition 4. One consequence of frustration is escape from the field (2).

An analysis of the effects of such frustration in the factory showed that it resulted, among other things, in high turnover and absenteeism. The rate of turnover for successful operators with efficiency ratings above standard was much lower than for unsuccessful operators. Likewise, operators on the more difficult jobs quit more frequently than those on the easier jobs. Presumably the effect of being transferred is a severe

frustration which should result in similar attempts to escape from the field.

In line with this theory of frustration and the finding that job turnover is one resultant of frustration, an analysis was made of the turnover rate of transferred operators as compared with the rate among operators who had not been transferred recently. For the year September, 1946, to September, 1947, there were 198 operators who had not been transferred recently; that is, within the 34-week period allowed for relearning after transfer. There was a second group of 85 operators who had been transferred recently; that is, within the time allowed for relearning the new job. Each of these two groups was divided into seven classifications according to their unit rating at the time of quitting. For each classification the percentage turnover per month, based on the total number of employees in that classification, was computed.

The results are given in Figure 19.1. Both the levels of turnover and the form of the curves are strikingly different for the two groups. Among operators who have not been transferred recently the average turnover per month is about 4½%; among recent transfers the monthly turnover is nearly 12%. Consistent with the previous studies, both groups show a very marked drop in the turnover curve after an operator becomes a success by reaching 60 units per hour, or standard production. However, the form of the curves at lower unit ratings is markedly different for the two groups. The nontransferred operators show a gradually increasing rate of turnover up to a rating of 55 to 59 units per hour. The transferred operators, on the other hand, show a high peak at the lowest unit rating of 30 to 34 units per hour, decreasing sharply to a low point at 45 to 49 units per hour. Since most changed operators drop to a unit rating of around 30 units per hour when changed and then drop no further, it is obvious that the rate of turnover was highest for these operators just after they were changed and again much later just before they reached standard. Why?

It is assumed that the strength of frustration for an operator who has not been transferred gradually increases because both the driving force toward the goal of reaching 60 and the restraining force of the difficulty of the job increase with increasing unit rating. This is in line with Propositions 1, 2, and 3, above. For the transferred operator, on the other hand, the frustration is greatest immediately after transfer when the contrast of her present status with her former status is most evident. At this point, the strength of the restraining forces is at a maximum because the difficulty is unusually great due to proactive inhibition. Then, as she overcomes the interference effects between the two jobs and learns the new job, the difficulty and the frustration gradually decrease and the rate of turnover declines until the operator reaches 45–49 units per hour. Then

at higher levels of production the difficulty starts to increase again and the transferred operator shows the same peak in frustration and turnover at 55–59 units per hour.

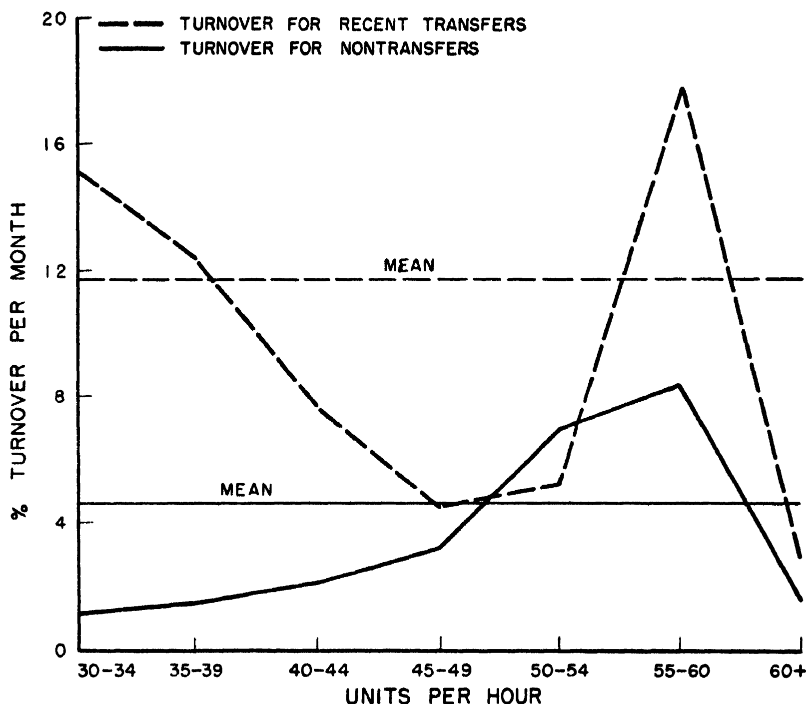


FIG. 19.1. The rate of turnover at various levels of production for transfers as compared with nontransfers.

Though our theory of frustration explains the forms of the two turnover curves in Figure 19.1, it seems hardly adequate to account for the markedly higher level of turnover for transfers as compared to nontransfers. On the basis of the difficulty of the job, it is especially difficult to explain the higher rate of turnover at 55–59 units per hour for transfers. Evidently, additional forces are operating.

Another factor which seems to affect recovery rates of changed operators is the amount of cohesiveness. Observations seem to indicate that a strong psychological subgroup with negative attitudes toward management will display the strongest resistance to change. On the other hand, changed groups with high cohesiveness and positive cooperative attitudes are the best relearners. Collections of individuals with little or no cohesiveness display some resistance to change, but not so strongly as the groups with high cohesiveness and negative attitudes toward management.

An analysis of turnover records for changed operators with high cohesiveness showed a 4% turnover rate per month at 30 to 34 units per hour, not significantly higher than in unchanged operators, but significantly lower than in changed operators with little or no cohesiveness. However, the acts of aggression are far more numerous among operators with high cohesiveness than among operators with little cohesiveness. Since both types of operators experience the same frustration as individuals but react to it so differently, it is assumed that the effect of the ingroup feeling is to set up a restraining force against leaving the group and perhaps even to set up driving forces toward staying in the group. In these circumstances, one would expect some alternative reaction to frustration rather than escape from the field. This alternative is aggression. Strong cohesiveness provides strength so that members dare to express aggression which would otherwise be suppressed.

One common result in a cohesive subgroup is the setting of a group standard concerning production. Where the attitudes toward management are antagonistic, this group standard may take the form of a definite restriction of production to a given level. This phenomenon of restriction is particularly likely to happen in a group that has been transferred to a job where a new piece rate has been set, for they have some hope that, if production never approaches the standard, the management may change the piece rate in their favor.

A group standard can exert extremely strong forces on an individual member of a small subgroup. That these forces can have a powerful effect on production is indicated in the production record of one presser during a period of 40 days:

Days	Efficiency Rating
In the Group	
1–3	46
4–6	52
7–9	53
10–12	56
Scapegoating Begins	
13–16	55
17–20	48
Becomes a Single Worker	
21–24	83
25–28	92
29–32	92
33–36	91
37–40	92

For the first 20 days she was working in a group of other pressers who were producing at the rate of about 50 units per hour. Starting on the 13th day, when she reached standard production and exceeded the production of the other members, she became a scapegoat of the group. During this time her production decreased toward the level of the remaining members of the group. After 20 days the group had to be broken up and all the other members were transferred to other jobs, leaving only the scapegoat operator. With the removal of the group, the group standard was no longer operative, and the production of the one remaining operator shot up from the level of about 45 to 96 units per hour in a period of four days. Her production stabilized at a level of about 92 and stayed there for the remainder of the 20 days. Thus it is clear that the motivational forces induced in the individual by a strong subgroup may be more powerful than those induced by management.

The Experiments

On the basis of the preliminary theory that resistance to change is a combination of an individual reaction to frustration with strong group-induced forces, it seemed that the most appropriate methods for overcoming the resistance to change would be group methods. Consequently, an experiment was designed (Experiment I) employing three degrees of participation in handling groups to be transferred. The first variation, the control group, involved *no participation* by employees in planning the changes, though an explanation was given to them. The second variation involved *participation through representation* of the workers in designing the changes to be made in the jobs. The third variation consisted of *total participation* by all members of the group in designing the changes. Two experimental groups received the total participation treatment. The four experimental groups were roughly matched with respect to (*a*) the efficiency ratings of the groups before transfer; (*b*) the degree of change involved in the transfer; and (*c*) the amount of cohesiveness observed in the groups.

In no case was more than a minor change in the work routines and time allowances made. The no-participation group, 18 hand pressers, had formerly stacked their work in half-dozen lots on a flat piece of cardboard the size of the finished product. The new job called for stacking their work in half-dozen lots in a box the size of the finished product. The box was located in the same place the cardboard had been. An additional two minutes per dozen was allowed (by the time study) for this new part of the job. This represented a total change of 8.8%.

The group treated with participation through representation, 13 pajama folders, had formerly folded coats with prefolded pants. The new

job called for the folding of coats with unfolded pants. An additional 1.8 minutes per dozen was allowed (by time study) for this new part of the job. This represented a total change of 9.4%.

The two total participation groups, consisting of eight and seven pajama examiners, respectively, had formerly clipped threads from the entire garment and examined every seam. The new job called for pulling only certain threads off and examining every seam. An average of 1.2 minutes per dozen was subtracted (by time study) from the total time on these two jobs. This represented a total job change of 8%.

The no-participation group of hand pressers went through the usual factory routine when they were changed. The production department modified the job, and the new piece rate was set. A group meeting was then held in which the group was told that the change was necessary because of competitive conditions, and that a new piece rate had been set. The new piece rate was thoroughly explained by the time-study man, questions were answered, and the meeting dismissed.

The group which participated through representatives was changed in a different manner. Before any changes took place, a group meeting was held with all the operators to be changed. The need for the change was presented as dramatically as possible, showing two identical garments produced in the factory; one was produced in 1946 and had sold for 100% more than its fellow in 1947. The group was asked to identify the cheaper one and could not do it. This demonstration effectively shared with the group the entire problem of the necessity of cost reduction. A general agreement was reached that a savings could be effected by removing the "frills" and "fancy" work from the garment without affecting the folders' opportunity to achieve a high efficiency rating. Management then presented a plan to set the new job and piece rate:

1. Make a check study of the job as it was being done.
2. Eliminate all unnecessary work.
3. Train several operators in the correct methods.
4. Set the piece rate by time studies on these specially trained operators.
5. Explain the new job and rate to all the operators.
6. Train all operators in the new method so they can reach a high rate of production within a short time.

The group approved this plan (though no formal group decision was reached), and chose the operators to be specially trained. A submeeting with the "special" operators was held immediately following the meeting with the entire group. They displayed a cooperative and interested attitude and immediately presented many good suggestions. This attitude carried over into the working out of the details of the new job, and when the new job and piece rates were set the "special" operators referred to the resultants as "our job," "our rate," etc. The new job and piece rates

were presented at a second group meeting to all the operators involved. The "special" operators served to train the other operators on the new job.

The total participation groups went through much the same kind of meetings. The groups were smaller, and a more intimate atmosphere was established. The need for a change was once again made dramatically clear. The same general plan was presented by management. However, since the groups were small, all operators were chosen as "special" operators; that is, all operators were to participate directly in the designing of the new jobs, and all operators would be studied by the time-study man. It is interesting to observe that in the meetings with these two groups suggestions were immediately made in such quantity that the stenographer had great difficulty in recording them. The group approved of the plans, but again no formal group decision was reached.

Results

The results of the experiment are summarized in graphic form in Figure 19.2. The gaps in the production curves occur because these groups were paid on a time-work basis for a day or two. The no-participation group improved little beyond their early efficiency ratings. Resistance developed almost immediately after the change occurred. Marked expressions of aggression against management occurred, such as conflict with the methods engineer, expression of hostility against the supervisor, deliberate restriction of production, and lack of cooperation with the supervisor. There were 17% quits in the first 40 days. Grievances were filed about the piece rate, but when the rate was checked, it was found to be a little "loose."

The representation group showed an unusually good relearning curve. At the end of 14 days, the group averaged 61 units per hour. During the 14 days, the attitude was cooperative and permissive. They worked well with the methods engineer, the training staff, and the supervisor. (The supervisor was the same person in the cases of the first two groups.) There were no quits in this group in the first 40 days. This group might have presented a better learning record if work had not been scarce during the first seven days. There was one act of aggression against the supervisor recorded in the first 40 days. We should note that the three special representative operators recovered at about the same rate as the rest of their group.

The total participation groups recovered faster than the others. After a slight drop on the first day of change, the efficiency ratings returned to a prechange level and showed sustained progress thereafter to a level about 14% higher than the prechange level. No additional training was

provided them after the second day. They worked well with their supervisors and no indications of aggression were observed from these groups. There were no quits in either of these groups in the first 40 days.

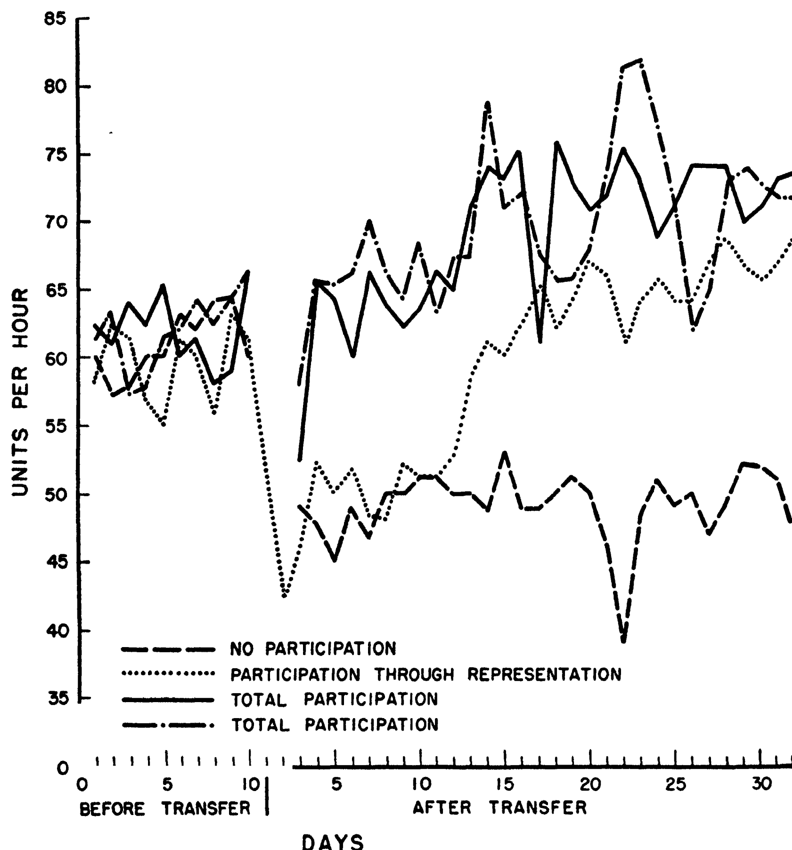


FIG. 19.2. The effects of participation through representation and of total participation on recovery after an easy transfer.

(A fifth experimental group, composed of only two sewing operators, was transferred by the total participation technique. Their new job was one of the most difficult jobs in the factory, in contrast to the easy jobs for the other four experimental groups. As expected, the total participation technique again resulted in an unusually fast recovery rate and a final level of production well above the level before transfer.)

In the first experiment, the no-participation group made no progress after transfer for a period of 32 days. At the end of this period the group was broken up, and the individuals were reassigned to new jobs scattered

throughout the factory. Two and a half months after their dispersal, the 13 remaining members of the original no-participation group were again brought together as a group for a second experiment (Experiment II).

This second experiment consisted of transferring the group to a new job, using the total participation technique. The new job was a pressing

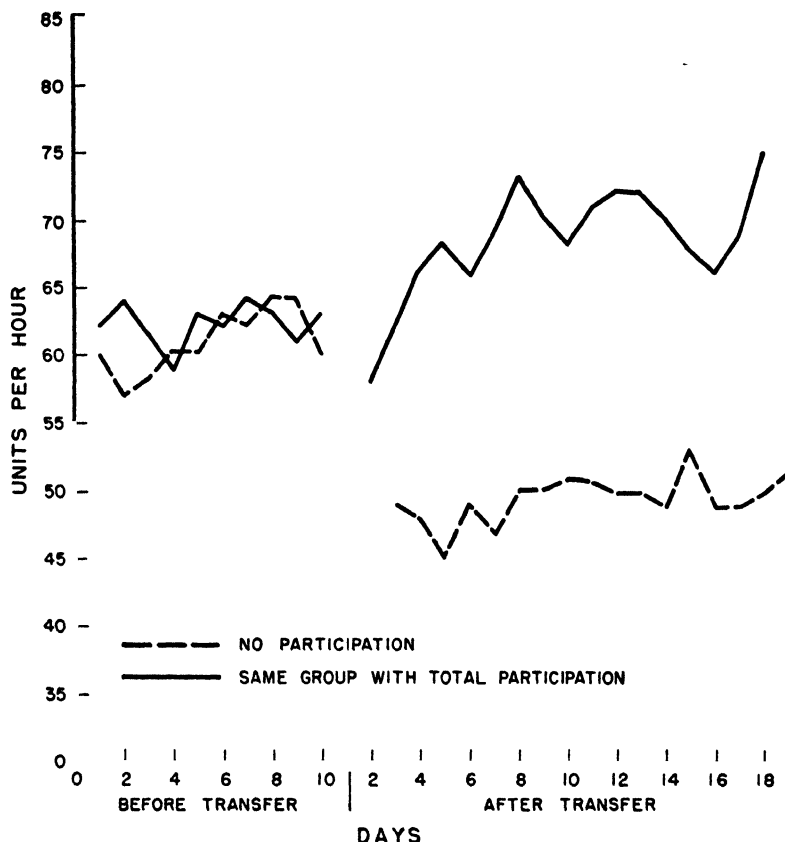


FIG. 19.3. A comparison of the effect of no participation with the total participation procedure on the same group.

job of comparable difficulty to the new job in the first experiment. On the average, it involved about the same degree of change. In the meetings, no reference was made to the previous behavior of the group on being transferred.

The results of the second experiment were in sharp contrast to the first (see Fig. 19.3). With the total participation technique, the same group now recovered rapidly to their previous efficiency rating and, like the

other groups under this treatment, continued on beyond it to a new high level of production. There was no aggression or turnover in the group for 19 days after change, a marked modification of their previous behavior after transfer. Some anxiety concerning their seniority status was expressed, but this was resolved in a meeting of their elected delegate, the union business agent, and a management representative.

Interpretation

The purpose of this section is to explain the drop in production resulting from transfer, the differential recovery rates of the three experimental treatments, the increases beyond their former levels of production by the participating groups, and the differential rates of turnover and aggression.

The first experiment showed that the rate of recovery is directly proportional to the amount of participation, and that the rates of turnover and aggression are inversely proportional to the amount of participation. The second experiment demonstrated more conclusively that the results obtained depended on the experimental treatment rather than on personality factors like skill or aggressiveness, for identical individuals yielded markedly different results in the no-participation treatment as contrasted with the total-participation treatment.

Apparently total participation has the same type of effect as participation through representation, but the former has a stronger influence. In regard to recovery rates, this difference is not unequivocal because the experiment was unfortunately confounded. Right after transfer, the latter group had insufficient material to work on for a period of seven days. Hence, their slower recovery during this period is at least in part due to insufficient work. In succeeding days, however, there was an adequate supply of work and the differential recovery rate still persisted. Therefore, we are inclined to believe that participation through representation results in slower recovery than does total participation.

Before discussing the details of why participation produces high morale, we shall consider the nature of production levels. In examining the production records of hundreds of individuals and groups in this factory, one is struck by the constancy of the level of production. Though differences among individuals in efficiency rating are very large, nearly every experienced operator maintains a fairly steady level of production, given constant physical conditions. Frequently the given level will be maintained despite rather large changes in technical working conditions.

As Lewin has pointed out, this type of production can be viewed as a quasi-stationary process—in the on-going work the operator is forever sewing new garments, yet the level of the process remains relatively

stationary (3). Thus there are constant characteristics of the production process permitting the establishment of general laws.

In studying production as a quasi-stationary equilibrium, we are concerned with two types of forces: (*a*) forces on production in a downward direction, and (*b*) forces on production in an upward direction. In this situation we are dealing with a variety of both upward forces tending to increase the level of production and downward forces tending to decrease the level of production. However, in the present experiment we have no method of measuring independently all of the component forces either downward or upward. These various component forces upward are combined into one resultant force upward, and the several downward component forces combine into one resultant force downward. We can infer a good deal about the relative strengths of these resultant forces.

Where we are dealing with a quasi-stationary equilibrium, the resultant forces upward and the forces downward are opposite in direction and equal in strength at the equilibrium level. Of course either resultant forces may fluctuate over a short period of time, so that the forces may not be equally balanced at a given moment. However, over a longer period of time, and on the average, the forces balance out. Fluctuations from the average occur, but there is a tendency to return to the average level.

Just before being transferred, all of the groups in both experiments had reached a stable equilibrium level at just above the standard production of 60 units per hour. This level was equal to the average efficiency rating for the entire factory during the period of the experiments. Since this production level remained constant, neither increasing nor decreasing, we may be sure that the strength of the resultant force upward was equal to the strength of the resultant force downward. This equilibrium of forces was maintained over the period of time when production was stationary at this level. But the forces changed markedly after transfer, and these new constellations of forces were distinctly different for the various experimental groups.

For the no-participation group the period after transfer is a quasi-stationary equilibrium at a lower level, and the forces do not change during the period of 30 days. The resultant force upward remains equal to the resultant force downward, and the level of production remains constant. The force field for this group is represented schematically in Figure 19.4. Only the resultant forces are shown. The length of the vector represents the strength of the force, and the point of the arrow represents the point of application of the force, that is, the production level and the time at which the force applies. Thus the forces are equal and opposite only at the level of 50 units per hour. At higher levels of production the forces downward are greater than the forces upward, and at lower levels

of production the forces upward are stronger than the forces downward. Thus there is a tendency for the equilibrium to be maintained at an efficiency rating of 50.

The situation for the other experimental groups after transfer can be viewed as a quasi-stationary equilibrium of a different type. Figure 19.5 gives a schematic diagram of the resultant forces for all the participation groups. At any given level of production, such as 50 units per hour or 60 units per hour, both the resultant forces upward and the resultant forces

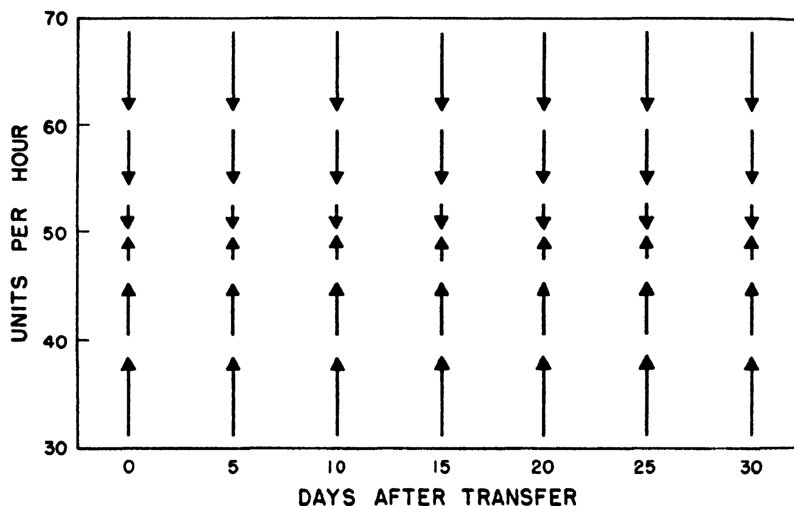


FIG. 19.4. A schematic diagram of the quasi-stationary equilibrium for the no-participation group after transfer.

downward change over the period of 30 days. During this time the point of equilibrium, which starts at 50 units per hour, gradually rises until it reaches a level of over 70 units per hour after 30 days. Yet here again the equilibrium level has the character of a "central force field" where, at any point in the total field, the resultant of the upward and the downward forces is in the direction of the equilibrium level.

To understand how the differences among the experimental and the control treatments produced the differences in force fields represented in Figures 19.4 and 19.5, it is not sufficient to consider only the resultant forces. We must also look at the component forces for each resultant force.

There are three main component forces influencing production in a downward direction: (*a*) the difficulty of the job; (*b*) a force corresponding to avoidance of strain; and (*c*) a force corresponding to a group standard to restrict production to a given level. The resultant force upward in the direction of greater production is composed of three additional com-

ponent forces: (*a*) the force corresponding to the goal of standard production; (*b*) a force corresponding to pressures induced by the management through supervision; and (*c*) a force corresponding to a group standard of competition. Let us examine each of these six component forces.

Job difficulty. For all operators, the difficulty of the job is one of the forces downward on production. The difficulty of the job, of course, is

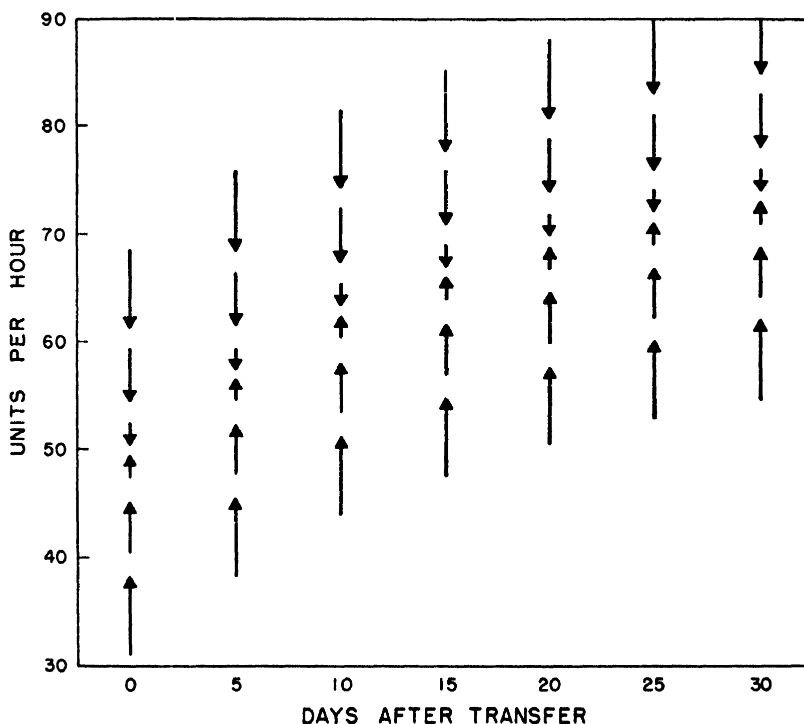


FIG. 19.5. A schematic diagram of the quasi-stationary equilibrium for the experimental groups after transfer.

relative to the skill of the operator. The given job may be very difficult for an unskilled operator but relatively easy for a highly skilled one. In the case of a transfer a new element of difficulty enters. For some time the new job is much more difficult, for the operator is unskilled at that particular job. In addition to the difficulty experienced by any learner, the transfer often encounters the added difficulty of proactive inhibition. Where the new job is similar to the old job, there will be a period of interference between the two similar but different skills required. For this reason a very efficient operator whose skills have become almost unconscious may suffer just as great a drop as a much less efficient operator.

Except for the experiment on only two operators, the difficulty of these easy jobs does not explain the differential recovery rates, because both the initial difficulty and the amount of change were equated for these groups. The two operators probably dropped further and recovered more slowly than any of the other three groups under total participation because of the greater difficulty of the job.

Strain avoidance. The force toward lower production corresponding to the difficulty of the job (or the lack of skill of the person) has the character of a restraining force; that is, it acts to prevent locomotion rather than as a driving force causing locomotion. However, in all production there is a closely related driving force towards lower production, namely, "strain avoidance." We assume that working too hard and working too fast is an unpleasant strain; and corresponding to this negative valence there is a driving force in the opposite direction, namely, towards taking it easy or working slower. The higher the level of production the greater will be the strain and, other things being equal, the stronger will be the downward force of strain avoidance. Likewise, the greater the difficulty of the job, the stronger will be the force corresponding to strain avoidance. But the greater the operator's skill, the smaller will be the strain and the strength of the force of strain avoidance. Therefore:

Proposition 5. The

$$\text{strength of the force of strain avoidance} = \frac{\text{job difficulty} \times \text{production level}}{\text{skill of operator}}.$$

The differential recovery rates of the three experimental groups in Experiment I cannot be explained by strain avoidance because job difficulty, production level, and operator skill were matched at the time immediately following transfer. Later, however, when the experimental treatments had produced a much higher level of production, these groups were subjected to an increased downward force of strain avoidance which was stronger than in the no-participation group in Experiment I. Evidently other forces were strong enough to overcome this force of strain avoidance.

The goal of standard production. In considering the negative attitudes toward transfer and the resistance to being transferred, there are several important aspects of the complex goal of reaching and maintaining a level of 60 units per hour. For an operator producing below standard, this goal is attractive because it means success, high status in the eyes of her fellow employees, better pay, and job security. On the other hand, there is a strong force against remaining below standard because this lower level means failure, low status, low pay, and the danger of being fired. Thus it is clear that the upward force corresponding to the goal of standard production will indeed be strong for the transfer who has dropped below standard.

It is equally clear why any operator who accepts the stereotype about transfer shows such strong resistance to being changed. She sees herself as becoming a failure and losing status, pay, and perhaps the job itself. The result is a lowered level of aspiration and a weakened force toward the goal of standard production.

Just such a weakening of the force toward 60 units per hour seems to have occurred in the no-participation group in Experiment I. The participation treatments, on the other hand, seem to have involved the operators in designing the new job and setting the new piece rates in such a way that they did not lose hope of regaining the goal of standard production. Thus participation resulted in a stronger force toward higher production. However, this force alone can hardly account for the large differences in recovery rate between the no-participation group and the experimental groups; certainly it does not explain why the latter increased to a level so high above standard.

Management pressure. On all operators below standard the management exerts a pressure for higher production. This pressure is no harsh and autocratic treatment involving threats; rather, it takes the form of persuasion and encouragement by the supervisors. They attempt to induce the low rating operator to improve her performance and to attain standard production.

Such an attempt to induce a psychological force on another person may have several results. In the first place the person may ignore the attempt of the inducing agent, in which case there is no induced force acting on the person. On the other hand, the attempt may succeed so that an induced force on the person exists. Other things being equal, whenever there is an induced force acting on a person, the person will locomote in the direction of the force. An induced force which depends on the power field of an inducing agent—some other individual or group—will cease to exist when the inducing power field is withdrawn. In this respect it is different from an "own" force which stems from a person's own needs and goals.

The reaction of a person to an effective induced force will vary depending, among other things, on the person's relation to the inducing agent. A force induced by a friend may be accepted in such a way that it acts more like an own force. An effective force induced by an enemy may be resisted and rejected so that the person complies unwillingly and shows signs of conflict and tension. Thus in addition to what might be called a "neutral" induced force, we also distinguish an *accepted* induced force and a *rejected* induced force. Naturally, the acceptance and the rejection of an induced force can vary in degree from zero (i.e., a neutral induced force) to very strong acceptance or rejection. To account for the difference in character between the acceptance and the rejection of an induced force, we make the following propositions:

Proposition 6. The acceptance of an induced force sets up additional "own" forces in the same direction.

Proposition 7. The rejection of an induced force sets up additional "own" forces in the opposite direction.

The grievances, aggression, and tension in the no-participation group in the first experiment indicate that they rejected the force toward higher production induced by the management. The group accepted the stereotype that transfer is a calamity, but the no-participation procedure did not convince them that the change was necessary, and they viewed the new job and the new piece rates set by management as arbitrary and unreasonable.

The other experimental groups, on the contrary, participated in designing the changes and setting the piece rates so that they spoke of the new job as "our job" and the new piece rates as "our rates." Thus they accepted the new situation and accepted the management-induced force toward higher production.

From the acceptance by the experimental groups and the rejection by the no-participation group of the management-induced forces, we may derive (by Props. 6 and 7 above) that the former had additional "own" forces toward higher production, whereas the latter had additional "own" forces toward lower production. This difference helps to explain the better recovery rate of the participation groups.

Group standards. Probably the most important force affecting the recovery under the no-participation procedure was a group standard, set by the group, restricting the level of production to 50 units per hour. Evidently this explicit agreement to restrict production is related to the group's rejection of the change and of the new job as arbitrary and unreasonable. Perhaps they had faint hopes of demonstrating that standard production could not be attained and thereby obtain a more favorable piece rate. In any case there was a definite group phenomenon which affected all the members of the group. We have already noted the striking example of the presser whose production was restricted in the group situation to about half the level she attained as an individual. In the no-participation group, we would also expect the group to induce strong forces on the members. The more a member deviates above the standard, the stronger would be the group-induced force to conform to the standard, for such deviations both negate any possibility of management's increasing the piece rate and at the same time expose the other members to increased pressure from management. Thus individual differences in levels of production should be sharply curtailed in this group after transfer.

An analysis was made, for all groups, of the individual differences within each group in levels of production. In Experiment I, the 40 days before change were compared with the 30 days after change; in Experiment II, the 10 days before change were compared to the 17 days after

change. As a measure of variability, the standard deviation was calculated each day for each group. The average daily standard deviations before and after change were as follows:

Experiment I	Before Change	After Change
No participation	9.8	1.9
Participation through representation	9.7	3.8
Total participation	10.3	2.7
Total participation	9.9	2.4
Experiment II		
Total participation	12.7	2.9

There is, indeed, a marked decrease in individual differences within the no-participation group after their first transfer. In fact, the restriction of production resulted in a lower variability than in any other group. Thus, we may conclude that the group standard at 50 units per hour set up strong group-induced forces which were important components in the central force field shown in Figure 19.4. It is now evident that for the no-participation group the quasi-stationary equilibrium after transfer has a steep gradient around the equilibrium level of 50 units per hour—the strength of forces increases rapidly above and below this level. It is also clear that the group standard to restrict production is a major reason for the lack of recovery in the no-participation group.

The table of variability also shows that the experimental treatments markedly reduced variability in the other four groups after transfer. In the group having participation by representation, this smallest reduction of variability was produced by a group standard of individual competition. Competition among members of the group was reported by the supervisor soon after transfer. This competition was a force toward higher production which resulted in good recovery to standard and continued progress beyond standard.

The total-participation groups showed a greater reduction in variability following transfer. These two groups were transferred on the same day. Group competition developed between the two groups, and this competition, which evidently resulted in stronger forces on the members than did the individual competition, was an effective group standard. The standard gradually moved to higher and higher levels of production, with the result that the groups not only reached but far exceeded their previous levels of production.

Probably a major determinant of the strength of these group standards is the cohesiveness of the group (1). Whether this power of the group over the members was used to increase or to decrease productivity seemed to depend upon the use of participation (4).

Turnover and Aggression

Returning now to our preliminary theory of frustration, we can see several revisions. The difficulty of the job and its relation to skill and strain avoidance has been clarified in Proposition 5. It is now clear that the driving force toward 60 is a complex affair: it is partly a negative driving force corresponding to the negative valence of low pay, low status, failure, and job insecurity. Turnover results not only from the frustration produced by the conflict of these two forces, but also from a direct attempt to escape from the region of these negative valences. For the members of the no-participation group, the group standard to restrict production prevented escape by increasing production, so that quitting their jobs was the only remaining escape. In the participation groups, on the contrary, both the group standards and the additional own forces resulting from the acceptance of management-induced forces combined to make increasing production the distinguished path of escape from this region of negative valence.

In considering turnover as a form of escape from the field, it is not enough to look only at the psychological present; one must also consider the psychological future. The employee's decision to quit the job is rarely made exclusively on the basis of a momentary frustration or an undesirable present situation. She usually quits when she also sees the future as equally hopeless. The operator transferred by the usual factory procedure (including the no-participation group) has, in fact, a realistic view of the probability of continued failure because, as we have already noted, 62% of transfers do fail to recover to standard production. Thus, the higher rate of quitting for transfers as compared to nontransfers results from a more pessimistic view of the future.

The no-participation procedure had the effect for the members of setting up management as a hostile power field. They rejected the forces induced by this hostile power field, and group standards to restrict production developed within the group in opposition to management. In this conflict between the power field of management and the power field of the group, the group attempted to reduce the strength of the hostile power field relative to the strength of their own power field. This change was accomplished in three ways: (*a*) The group increased its own power by developing a more cohesive and well-disciplined group. (*b*) They secured "allies" by getting the backing of the union in filing a formal grievance about the new piece rate. (*c*) They attacked the hostile power field directly in the form of aggression against the supervisor, the time-study engineer, and the higher management. Thus the aggression was derived not only from individual frustration, but also from the conflict between two groups. Futhermore, this situation of group conflict both helped to define

management as the frustrating agent and gave the members strength to express any aggressive impulses produced by frustration.

Conclusions

It is possible for management to modify greatly or to remove completely group resistance to changes in methods of work and the ensuing piece rates. This change can be accomplished by the use of group meetings in which management effectively communicates the need for change and stimulates group participation in planning the changes.

For Harwood's management, and presumably for managements of other industries using an incentive system, this experiment has important implications in the field of labor relations. A majority of all grievances presented at Harwood have always stemmed from a change situation. By preventing or greatly modifying group resistance to change, this concomitant to change may well be greatly reduced. The reduction of such costly phenomena as turnover and slow relearning rates presents another distinct advantage.

Harwood's management has long felt that action research, such as the present experiment, is the only key to better labor-management relations. It is only by discovering the basic principles and applying them to the true causes of conflict that an intelligent, effective effort can be made to correct the undesirable effects of the conflict.

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Part Four

INDIVIDUAL MOTIVES AND GROUP GOALS

19

Individual Motives and Group Goals: Introduction

Everyone has belonged, at one time or another, to a group that never seemed to "get anywhere." We have all experienced, too, groups with clear purposes and effective means for reaching them. People are ordinarily quite sensitive to this feature of group functioning, which Chester Barnard (3) has called "the effectiveness of cooperative effort." If a group has clear goals and if it is effective in reaching them, personal satisfaction of members and group morale are usually high.

Practical-minded administrators and group leaders necessarily have to employ working hypotheses about the determinants of group effectiveness. They have to take actions every day which they hope will give their groups better unity of purpose and make them better able to achieve their goals. If we were to collect these working hypotheses from a representative sample of group leaders—administrators in business or government, ministers, labor leaders, group workers, teachers, officers of clubs, or what have you—we would have a long and confusing list. After accounting for differences in terminology, however, we should probably find that most of these hypothesized determinants of group effectiveness could be subsumed under one or more of the following headings:

1. the extent to which a clear goal is present
2. the degree to which the group goal mobilizes energies of group members behind group activities
3. the degree to which there is conflict among members concerning which one of several possible goals should control the activities of the group
4. the degree to which there is conflict among members concerning means that the group should employ in reaching its goals
5. the degree to which the activities of different members are coordinated in a manner required by the group's tasks
6. the availability to the group of needed resources, whether they be economic, material, legal, intellectual, or other.

In addition to these determinants the list would also certainly contain many items specifying required group structures and processes, such as

effective communication, competent leadership, clear lines of authority, and participation in decisions.

That determinants broadly of this nature do, in fact, greatly influence the effectiveness of group actions can hardly be denied. Successful group leaders undoubtedly deal with such determinants in their work with groups. But if we press more deeply by asking our experts just exactly what they mean by the terms they use and precisely how they work with these determinants, we find much disagreement and little indisputable evidence for the views expounded.

The ultimate task of social science in this field, and the secret of the contribution it can make, consists of examining the phenomena in question in such a manner that unequivocal conclusions can be drawn concerning what conditions do, in fact, lead to what consequences under what circumstances. In such an examination the scientist must, of course, designate clearly just what phenomena are to be brought together under one problem area. He must also establish a set of terms or concepts to be employed in describing the phenomena. And he must adopt rules to be followed in attaching his concepts to specific observations and measurements. This process of designating a scientific problem area and of establishing useful descriptive language for it is one of the most difficult. Unfortunately, the study of the dynamics of group effectiveness is still largely concerned with this preliminary phase of research.

We must begin, then, with some rather elementary questions. What do we mean when, in everyday language, we assert that a group does or does not "get somewhere" or "accomplish something"? These terms seem to imply that a group can be said to have a location, that it may change its location from time to time, and that certain locations are preferred by all or some segment of the members to other locations. Thus, if a group does not "get anywhere," one would assume either that it remained in the same location or that any change of location accomplished was not to a more preferable position. If, on the other hand, a group meeting or other group activity did make progress and did "get somewhere," one would assume that the group had changed its location to a more desirable position.

These rather vaguely conceived notions of "location" and of "preferred location" help us designate a class of phenomena for further analysis and empirical investigation. Whenever it is possible to assert that some location is relatively the most preferred for a group and that a sequence of efforts to change the position of the group will terminate when that location is reached, we shall designate that location as the group's goal. Whenever the group changes its location, we shall speak of group locomotion.

With these concepts we may ask concerning any group at any given

time (*a*) whether, or to what degree, it has a goal; (*b*) whether it has more than one goal, and, if so, whether these goals are compatible or conflicting; (*c*) whether as a result of some group activity group locomotion has occurred; and (*d*) whether any given locomotion was toward or away from the group's goal. If we are able to answer such questions as these, that is to say, if we can determine in a specific situation whether a group has made progress toward its goal, then we may ask the scientifically more interesting question of what conditions in general facilitate or inhibit the establishment of group goals of various kinds, and what conditions help or hinder a group's locomotion toward its goals. Furthermore, we may then examine the relations of individual members to these group phenomena: How do goals of individuals become "converted" into group goals? Under what conditions do individuals accept (or reject) group goals and guide their actions by the nature of these goals? What characterizes actions by individuals that result in a group locomotion?

We shall be concerned in this and the following chapters primarily with the motivational aspects of groups, as reflected in their goals. Problems related to group leadership and effective group performance are discussed in Part Five.

Refining the Concept of Group Goal

To gain an understanding of the phenomena related to group goals it is essential that we be as clear as possible concerning the basic meaning of the concept *group goal.* Various definitions have been proposed by different authors. Many of these have conceived of a group goal as some sort of composite of individual goals. Since a group is composed of individuals, it is argued that a group goal must be defined as an amalgam of individual goals. We shall briefly examine two forms of this general approach.

Composite of Individual Goals

One common proposal is that group goal can have strict meaning only as the *sum of similar individual goals.* In its simplest form, however, this conception seems most unsatisfactory. Three young men all desiring to marry the same young lady might be said to have highly similar goals (or even an identical goal) and yet one would hardly assert that a group goal of marrying the lady were present. Or, the members of a committee might each individually want to get home after a long day of meetings, but it would not seem useful to assert that the committee had a goal of going home. Thus, similarity of individual goals seems hardly to be an adequate criterion for the existence of a group goal.

To overcome this difficulty, it is sometimes proposed that if similar individual goals are *shared,* they constitute a group goal. This additional requirement does appear to make the conception more acceptable, but it is exceedingly difficult to provide a definition of sharing that is rigorous and, at the same time, a satisfactory part of the intuitive meaning of group goal. Consider, for example, a definition of *shared individual goals* which conveys the meaning that each individual realizes that each other individual has the same or similar goals. Now, if we return to the two examples just noted, we see that we have hardly improved the conception by adding the requirement that the individual goals be shared. The three young men would not become a group with a group goal merely as a result of learning that each wanted to marry the same lady. In the second example, it is undoubtedly true that the committee might function differently and even change its goals as a result of a common realization that each member wanted to go home, but it strains the conception of group goal to hold that, even when each committee member is fully informed of the goals of the others, the goal of the committee automatically becomes one of "going home." [1]

Finally, it should be noted that a group goal may sometimes exist when there appears to be no substantial similarity among the individual goals of the members. An illustration of this situation is provided by three boys who embark upon a single enterprise of constructing a stand to sell lemonade. One boy's goal is to make enough money to buy a baseball glove. The second boy is solely interested in using the carpentry tools he has just received for his birthday. The third boy is motivated to join in and even do the disagreeable chores because ordinarily the other two do not allow him to play with them. Despite these rather dissimilar personal goals, the three boys successfully complete the group enterprise, and presumably we should assert that a group goal exists.

The fundamental difficulty in conceiving of a group goal as a composite of similar individual goals may be stated this way. The essential feature of a goal is that it specifies a preferred state and guides action toward the attainment of this state. An *individual goal* specifies a preferred

[1] Israel (11) has presented a thoughtful critique of the approach advocated here and has proposed an alternative formulation. He asserts that the three young men who wish to marry the same lady do in fact have a goal in common and constitute a group with a goal. He then distinguishes between situations of cooperative and competitive interdependence among members for goal attainment. He labels these two situations as having a "cooperative goal structure" and a "competitive goal structure," respectively. Our example, in Israel's terms would be one of a group with a competitive goal structure. We agree with Israel that the issue is simply a matter of definition and that the social scientist is free to define terms as he wishes. Specifically, he is free to define "group goal" so that the three competing young men do constitute a group with a group goal. We believe, however, that less confusion will result by attempting, wherever possible, to define technical terms so as to be congruent with popular usage.

state for an individual and guides his action toward its attainment; a *group goal* specifies a preferred state for the group as an entity and guides collective action toward achieving it. The mere fact that individuals have similar preferred states for themselves does not mean that a preferred state for a group exists.

A more promising conception of group goal is suggested if we start with a phenomenological analysis of how the situation looks to an individual member of a group. From the individual member's point of view, it is clear that he characteristically has *goals for the group.* As a member of a fraternity he wants the fraternity to pledge the most desirable members of the freshman class. As a member of the Rotary club he thinks that it should embark upon a program of raising funds for crippled children. Certainly he experiences satisfaction or frustration as a result of actions taken by his group, depending upon how they affect the group's position with respect to these goals. These considerations suggest, then, that a group goal might be conceived of as some sort of composite of *individual goals for the same group.*

Careful examination of this conception shows that it has many advantages. It lends itself, for example, to operational definition: to determine the group goal one might determine the degree of consensus among reports of members about their goals for the group. It provides, also, a clear conceptual method for linking such group variables as group locomotion or group structure to individual variables of motivation, perception, and learning. Many difficulties arise, however, when one attempts to specify just how various individual goals for the group are to be combined into a single group goal. Is unanimity required, or a simple majority, or do the goals of leading members have more weight? Undoubtedly, groups differ considerably in these matters. At one extreme is the group which will not undertake any group enterprise until all members have agreed upon a single goal for the group; at the other is the group whose goal is effectively set by a single individual. In both instances we should want to assert that a group goal exists. It would seem better, therefore, to conceive of the goals of members for the group as *determinants* of particular group goals rather than attempt to define group goal as some specified combination of individual goals for the group.

Goal as a Property of a Group

Because of the many difficulties encountered in constructing the concept of group goal from combinations of individual goals or of individual goals for the group, we favor a more radical approach. We believe that it is fruitful to define *group goal* at the group level of description, to conceive of a group goal at the group level in a manner formally similar

to the conception of individual goals at the individual level. If, for example, one attempts to describe open-mindedly the situation in which a fund-raising committee is seeking to collect a certain sum of money by a particular date, it seems quite natural to assert that this target is a goal for the group, regardless of the manner in which the goal was set. Progress toward this goal can be evaluated, and various effects can be seen as stemming from success or failure in goal attainment. To be sure, it makes a great deal of difference what the motivations of individual members are and especially what their goals for the group are, but these should be viewed as determinants of events in the group, including the selection of group goals, rather than components of the definition of group goal.[2]

The formal similarity between group goal and individual goal suggests how the analysis of group goals might proceed. Some of the major features of this conception may be indicated.

1. *Group as an entity located in an environment.* For this purpose, a group is conceived, at least as a first approximation, as an undifferentiated entity which at any given time has a location in an environment. If the group's location changes, we say that group locomotion takes place.

2. *Group goal as a preferred location for the group.* When a group goal exists some location in the group's environment has become a "preferred" one for the group. The group then displays directed activity toward the more preferred location and away from less preferred ones. Group success is evaluated in terms of progress made toward the preferred location.

3. *Group locomotion by performance of group activities.* In order for a group to change its location to a preferred one, it is usually necessary for it to perform a sequence of group activities. Such a sequence which leads to a preferred location may be thought of as a path through the group's environment to its goal. Group activities, although carried out by means of the behavior of individuals, must be described at the group level. Thus, for example, if a church sets up a goal of "building a new edifice," the related group activities are "acquiring a site," "employing an architect," "obtaining a mortgage," and the like.

4. *Group decision as giving potency to a particular path-goal structure.* At any given time it is possible for there to exist several alternative goals

[2] In a study of group learning, Hays and Bush (10) have demonstrated the feasibility of treating a group as an entity with properties formally similar to those of individuals. Employing a technique previously used to study the learning of individuals, they required three-man groups to operate as units. To predict the learning curves of these groups, they constructed a "group-actor" mathematical model in which the same properties are attributed to the group, as an entity, as have been found to characterize the individual. Although the experimental results make it clear that the specific nature of the relationships among the members of the group undoubtedly affect the nature of group learning, the "group-actor" model predicts the obtained data remarkably well.

and several alternative paths to the same goal. The process by which one path-goal structure acquires dominant potency for the group may be called a group decision. It must be understood, however, that a group decision, in this sense, may be reached with or without the full participation (or even awareness) of all group members. Thus, the decision of a church to build a new edifice may commit the church, as a whole, to a sequence of group activities even though only the members of the executive committee actually participate in the decision. The way in which group decisions are reached may, of course, be expected to have a considerable influence on subsequent events in the group.

This general approach to the phenomena of group goals leaves open many questions of *how* the processes involved work, but it does permit us to proceed with analysis and research before all the details are worked out. In practice, moreover, the conceptualization does not seem far fetched. For example, in a conference it is possible to assert that the official agenda specifies at least part of the goals of the group. Or, to refer to a previous example, a fund-raising committee may be quite explicit that its goal is to collect a certain sum of money by a certain date. The committee's location at any given time can be specified in terms of amount of money collected. Each time a contribution is received the committee, as a whole, undergoes a locomotion toward its goal. Since its location is specified in terms of amount of money collected, there is usually little difficulty in identifying the location of the group and its rate of locomotion. Shartle (21) reports, on the basis of extensive research in formal organizations, that most such organizations possess written statements regarding goals. These are found in such documents as by-laws, minutes, progress reports, and financial statements. Moreover, he has found that responsible executives can state their perceptions of the goals of the organization and the degree of progress made toward them at any given time.

The treatment of groups as undifferentiated entities which can be located in relation to their goals has also proved useful in several experimental studies of groups under laboratory conditions, although in many of these experiments the concepts of group goal and group locomotion have not been used explicitly. For example, Horwitz (Chap. 20) gave groups the task of putting together a jig-saw puzzle by taking a group vote concerning where each piece should be placed. Whenever the group correctly placed a piece of the puzzle, the group moved a step closer to the goal. The tensions of individual members were shown to depend on the location of the group. An experiment conducted by Leavitt (reported in Chap. 35) provides another illustration. Here the group was assigned the task of assembling information so as to arrive at the answer to an intellectual problem. Although in this experiment it was

rather difficult to identify each step in the progress toward the goal, the transition from "no solution" to "having the answer" was clear, and Leavitt could construct "group learning curves" indicating how the group shortened the time required to reach its goal with repetition of the group task.

These examples, in which the location of the group is reasonably clear, should not be taken to indicate that groups always have an unambiguous location. Indeed, one of the most common practical problems of group management arises from the difficulty often encountered in knowing precisely where a group is located in relation to its goal and what steps need be taken by the group to reach its goal. We shall return to this problem when we discuss the "operationality" of group goals. It is sufficient to note here that both individuals and groups may exist in an ambiguous environment.

It should be noted, too, that the notion of group goal need not be restricted to openly agreed upon goals (although these certainly present fewer methodological problems in research). Some investigators approaching the study of groups from a psychoanalytic background propose that groups, per se, may have goals not overtly expressed by members. Bion and Ezriel (4, 8) have described such phenomena in groups organized for purposes of individual therapy. Even more generally it would appear that the intuitive notion of "hidden agenda" in any group meeting is quite meaningful but, admittedly, extremely difficult to define and measure.

Goals, Subgoals, and Group Action

An essential feature of our conception of group goals is that they steer group activities so as to bring the group to a preferred location. An adequate understanding of how this process works requires that we examine (*a*) the relationships between group goals and group activities and (*b*) how "individual behaviors" become "group activities," in the sense that they affect the location of the group in its environment.

Group goals may differ widely in the nature of their relations to group activities. March and Simon (17, 155) have proposed that a distinction should be made between *operational* and *nonoperational* goals according to whether or not there exists some basis for relating the goal with possible courses of action. If there is some way of determining whether and to what extent a goal will be realized by a particular sequence of group activities, then the goal is operational; otherwise it is not. The basic purposes of most groups and organizations seem usually to have a low degree of operationality. A governmental agency may seek "to advance the general welfare"; a business may seek "to maximize profits in the long-run";

a professional society may exist "to advance the field in which members work"; and a women's club may have as its purpose "to raise the cultural level of the community." It would be difficult to evaluate alternative group activities in terms of their relative contribution to the attainment of these goals. On the other hand, the goal of a church "to increase membership" or "to build a new edifice" is more operational because a limited number of appropriate group activities might be expected to move the group toward these goals.

March and Simon offer the hypothesis that when basic goals are nonoperational there is a tendency to steer group activities by means of operational subgoals which have some plausible linkage to the basic goal. They suggest (17, 156) that "a business firm may understand to some degree how its specific actions affect its share of market, but may understand less surely how its actions affect long-range profits. Then the subgoal of maintaining a particular share of the market may become the effective criterion of action—the operational goal." Another example of this tendency might be the professional society whose basic goal is "to advance the field in which members work." Since this goal has a low degree of operationality, more operational subgoals might be set up, such as "large attendance at annual meetings" or "a full program of papers." The success of the society would then be in terms of these more tangible criteria.

On the basis of practical experience in groups one might doubt that all groups show a tendency to select highly operational goals; many groups persist with only the most vaguely formulated goals. Unfortunately, however, little systematic research has yet been done to determine the conditions which influence the degree of operationality of goals selected by groups. In general it would appear likely that whenever there is difficulty in mobilizing group activities (due to intragroup conflict, member apathy, inadequate resources, etc.) there will be a tendency to avoid the establishment of operational group goals; nonoperational goals are "safe" in the sense that group activities cannot unequivocally be termed a failure under these conditions. It seems, too, that if the principal basis of attraction to the group is simply to be with other people, there will be a tendency to avoid operational goals which might mobilize efforts toward other purposes. Tea parties seldom lead to social action.

Not much empirical evidence has yet been accumulated concerning the consequences of different degrees of operationality of goals for group functioning. We have suggested that nonoperational goals make it possible for a group to avoid undertaking group activities which might result in failure. For much the same reasons, however, they make it difficult to mobilize group activities of any sort. One reason that groups get bogged down and never "get anywhere" is that they have failed to formulate

acceptable operational goals. And, if a group has only nonoperational goals, criteria other than those related to these goals may be employed in selecting group activities. Thus, the activities of a club may be selected simply because it is customary for clubs to have certain kinds of activities or because they satisfy strictly individual motives such as those for affiliation or for something to do. Anyone primarily motivated to accomplish some end by means of group action would find membership in such groups exceedingly frustrating.

A group with an adequately formulated operational group goal will be better able to select appropriate group activities for attaining the goal. Thus, a church that has decided to build a new edifice will readily embark upon the activities of acquiring a site, employing an architect, raising funds, and obtaining a mortgage. But each of these group activities requires that individual people engage in particular behaviors which contribute effectively to the group activity. The group activity of acquiring a site, for instance, might involve a great variety of individual behaviors, such as talking with real estate agents, inspecting available sites, bargaining with owners concerning price, and signing a contract. It is clear that group locomotion will not occur unless these individual behaviors are performed properly.

Unfortunately, little systematic work has been devoted to the discovery of the properties of individual behaviors which make them contribute to group locomotion. It is evident, of course, that all behaviors do not result in the same amount of group progress. In a discussion group long periods of interaction may appear to get the group nowhere, while a properly chosen comment may bring the group to a solution of its problem in one step. Or, a fund-raising committee may make no progress in its campaign until one particular member uses his influence to get the community's leading citizen to make a contribution. It appears that each operational group goal has associated with it a set of "task requirements" which must be satisfied if progress toward the goal is to take place. These task requirements are determined partly by the nature of the goal, partly by the location of the group in its environment, and partly by the resources of the group. The behavior of individuals will contribute to group progress only if they are appropriate to the task requirements. A great deal of research must be conducted before we shall have a satisfactory understanding of these phenomena. A promising line of investigation is suggested by the stimulating theoretical analysis conducted by Roby and Lanzetta (19).

Formation of Group Goals

We turn our attention now to the question of how group goals are formed. What are the factors which influence the selection of goals by a

group? Although this question has stimulated speculation and, especially, proposals as to how groups *should* go about selecting a goal, remarkably little evidence is available to provide an answer. In an effort to simplify thinking about the complexities that are obviously involved, we shall distinguish two aspects of the process of group goal-formation. The first of these concerns the way in which individuals develop goals for a group. The second focuses attention on the conversion of goals for a group into a group goal. Although these two aspects of the process can be considered separately, it should be clear that in any concrete situation they may occur simultaneously and in interaction.

Individual Goals for a Group

It is reasonable to assume that one necessary condition for a group goal to come into existence is that at least some members of the group have goals for the group. Three classes of influence appear to affect these goals: the motives of group members, superordinate goals of the group, and relations between the group and its social environment.

Motives of members. The way an individual's motives influence his choice of a *goal for a group,* we may assume, is not basically different from the way they influence his choice of a goal for himself. In both cases, the attractiveness of the goal depends upon his judgment of the satisfaction he would derive from attainment of the goal (by himself or by the group), of the costs incurred by him in the process, and of the probability that the goal will be attained. Detailed discussions of goal setting may be found in Lewin (13), Atkinson (2), and Thibaut and Kelley (26). This rather abstract formulation of the process may be better understood if we place it more concretely in the context of group decision-making. For this purpose, we consider again our example of the three boys who embark upon the group activity of building a lemonade stand. It will be recalled that each boy is assumed to have a dominant motive: one boy wants to make enough money to buy a baseball glove; the second wants to use his new carpentry tools; and the third desires simply to play with the other two. It should be evident that there is nothing about these separate motives which requires that the group goal resulting from them be "build a lemonade stand." And yet, it appears that this group goal is a rather natural outcome, considering the nature of the individual motives. How is this "fitting" of individual motives and group goal accomplished? Obviously, many different sequences of events might take place, but the following appears not unlikely.

When the three boys first get together they soon ask the inevitable question, "what shall we do?" In other words, they seek to establish a group goal and its associated group activities. Various suggestions may be proposed: "let's play ball," "let's collect bottles and sell them," "let's

build a club house," "let's build a lemonade stand," and so on. Each suggestion constitutes simultaneously a possible individual goal for the group and a possible alternative for the group as an entity. After several alternative goals have been proposed, the boys face the task of evaluating the relative merits of each: "I don't want to play ball because I don't have a glove"; "if we sell bottles, we could earn enough money for me to buy a glove"; "let's build something so I can use my tools"; and so forth. In other words, each boy attempts to evaluate each alternative, partially at least, in terms of its potential satisfaction of his own motives. The result of this process is a more or less explicit preference ranking by each boy of the alternative group goals. Finally, by a process which we shall not consider here, the boys somehow combine their personal preferences so as to form a group goal which will then steer their collective activities.

Certain features of the boys' conversation should be noted. First, each boy has some satisfactions which he hopes to achieve by means of the collective group activity. Second, he evaluates each proposed group goal according to his judgment of the contribution it might make to his satisfaction. Third, the task for the group appears to be one of discovering a group goal which promises enough satisfaction to each boy so that he will be willing to accept it.

One important difference between an individual's goal for himself and his goal for a group should be recognized. In order for a person to attain his goal for a group, the group (not he, alone) must successfully perform the relevant group activities. For this reason, the individual is dependent upon the group for gaining satisfaction from his goal for the group. In assessing the probability that a goal for the group will be attained, the individual must therefore estimate the probable impact of many conditions upon the performance of the group. Thus, the boy who considers the prospect of getting money for a baseball glove by means of the group activity of selling lemonade needs to assess more or less explicitly the probability of group success—will the group stick together to the end, do the boys possess the necessary skills of carpentry and lemonade-making, can they obtain the needed supplies, is there a market for lemonade? Rosenthal and Cofer (20) have documented one aspect of the member's dependence on others for group goal achievement. They created a situation where teams engaged in a joint enterprise of earning a group score by throwing darts. One member of the group was privately instructed to display an attitude of indifference. As a result of this behavior, the other members became pessimistic about the possibility of goal attainment, lowered their interest in the group goal, and tended to substitute for it their own personal goals.

On the basis of available evidence, then, we may make the following summary statement. The valence, for any given group member, of a par-

ticular goal for the group may be expected to be influenced by the nature of the member's motives, by his judgment of the rewards and costs involved for him in activities relevant to this goal, and his subjective probability that the group will attain the goal. The process involves both cognitive and motivational components. It should be recognized, moreover, that both the motives and the judgments of the group members are themselves usually influenced by membership in the group.

Superordinate group goals. If we turn our attention from highly informal and temporary groups, like that of the boys embarking upon the construction of a lemonade stand, to more established and formalized groups, it becomes clear that another set of influences is also operative in the formation of goals for a group. One important feature of established groups is that members, when engaged in group decision-making, refer their evaluations of alternative goals for the group not only to their own motives but also to existing longer-range goals, objectives, or purposes of the group. For example, the members of a service club, in considering the program for a coming year, will tend to evaluate proposed alternatives in terms of their appropriateness to the basic objectives of the club and their compatibility with prior commitments of the club. In most established groups, decision making has more the character of selecting subgoals which are subordinate to an existing goal than of constructing group goals, *de novo,* solely on the basis of the personal motives of participants (although a sensitive observation of this process would surely detect the influence of personal motives here too). Unfortunately, almost no systematic research has been conducted on the ways in which superordinate goals influence the selection of subgoals, and little is known about the ways in which these influences work.

The group and its social environment. Another important feature of enduring groups is that they have certain relationships with other groups and institutions—they exist in a social environment—and this social environment appears to exert a pronounced influence upon the setting of goals by the group. This aspect of goal setting is considered in some detail by Thompson and McEwen in Chapter 24. They emphasize the fact that when a group, or organization, embarks upon the setting of goals it is attempting, in part, to establish a desired relationship between the organization and its environment. They point out that a change either in the properties of the group or of its social environment requires review and perhaps alteration of goals. The necessary interaction between a group and its social environment introduces an element of environmental control over the group. To the degree that a group must please or satisfy those in its social environment, its goals must be ones which will be acceptable: schools must teach what is congenial to the community; companies must manufacture what will sell; and TV studios

must provide what people will take the time to watch. It follows that the selection and appraisal of goals is more difficult as the "product" of the group becomes less tangible, harder to measure, and as society finds it more difficult to decide upon and to express its acceptability of the product.

Members may be influenced, then, in selecting their goals for the group at least partially by anticipated reactions from the social environment of the group. The attitudes and behaviors of people in the group's environment may well be a function, in turn, of the degree to which the group is seen as relevant to furthering or obstructing the objectives of these people. It is not uncommon for groups and organizations to spend considerable energy and talent in convincing the significant elements of their social environment that their goals should be accepted by society, nor for society to invent ways to curb or destroy groups whose goals are viewed as threatening.

Synthesis of influence. An individual, then, in constructing his preferences for group goals may be subjected to many influences. Some of these arise from his personal motives and his views of how they can best be satisfied. Others stem from his concern for more basic goals of the group and for the group's welfare in its social environment. The ways in which these various influences become combined into a "resultant evaluation" by the individual are not fully understood. Obviously, there are great differences among individuals: some give major weight to their personal motives, while others emphasize the welfare of the group; some experience great conflict between personal motives and group welfare, while others experience little or none. The reasons for these differences among people probably reside both in enduring personality dispositions and in such relationships between the individual and the group as his attraction to membership, acceptance by the group, and position in the group.

The distinction, suggested here, between personal motives and concern for the welfare of the group, is, of course, an ancient one. People have long been characterized as "selfish" or "altruistic." Research, however, has only begun to provide systematic knowledge about the determinants of these orientations and their consequences. An excellent beginning was made by Lewis and Franklin (14, 15) in their experimental studies of the different motivational consequences of a "task orientation" and an "ego orientation." Fouriezos, Hutt, and Guetzkow (9) extended this analysis and applied it more explicitly to groups in their study of "self-oriented needs" in discussion groups. Observation from 72 decision-making conferences led these investigators to conclude that "those groups with the highest scores on self-oriented needs rated themselves lowest on the satisfaction measures; groups which exhibited more self-oriented need be-

havior were least satisfied with the meeting in general, with the decisions reached, with the way in which the group reached its decision, and with the chairmanship of their meeting." It was also found that groups with high scores on self-oriented need behavior completed fewer items on the agenda but held longer meetings. Deutsch and Thomas give a detailed analysis in Chapters 22 and 23 of some of the ways in which different kinds of interdependence among group members affect their orientations to self and the group.

Converting Goals for the Group into a Group Goal

The formation of a group goal requires that the various goals for the group held by the different members be somehow converted into a single goal capable of steering group activities. A review of the literature on this problem reveals that no comprehensive understanding of it has yet emerged, although certain aspects have been studied in rather great detail.

Normative approaches. There has been a long-standing interest, especially among political theorists, economists, and mathematicians, in formulating criteria for the way in which the preferences of individuals *should* be combined into a group decision. One of the most influential approaches within this tradition seeks, by means of mathematical reasoning and formal models, to construct rules of decision making which will conform to the democratic doctrine that group decisions should optimally represent the individual interests of all participants. Probably the earliest mathematical treatment of this sort was that of the French scholar, Borda, who published his results just shortly before the French Revolution. This work was extended in various ways during the period, 1873–1885, by C. L. Dodgson (Lewis Carroll) who sought to improve the quality of group decisions made by faculty committees at Oxford.[3] With the recent rise of the theory of games and decisions a high level of mathematical sophistication has been achieved, as may be seen in the publications of Arrow (1) and Luce and Raiffa (16). The purpose of this work has been formulated in the following way (16, 368): "Given the preference rankings (ties allowed) of *m* alternatives by the members of a society of *n* individuals, define 'fair' methods for aggregating this set of individual rankings into a single ranking for the society. Such a rule for transforming an *n*-tuple of rankings—one for each individual—into a ranking for the society is called a social welfare function."

A rather different criterion than "fairness" to individuals is to be

[3] An interesting desciption of these early treatments may be found in a book by Black (5).

found, implicitly at least, in other discussions of how group decisions should be made. This criterion might be labeled "group effectiveness." Here the point of view is taken that group goals should be formed by whatever method will best assure that the group will effectively realize its most basic objectives. Thus, if one of the members of the group is an "expert," it might be argued that his goal for the group should be given complete weight in selecting the group goal. It is not surprising, perhaps, that this view is found most commonly among executives and management theorists. However, using the criterion of group effectiveness to construct rules of group decision-making is difficult since so little is known about the empirical consequences which follow from different procedures. For example, are better decisions likely to be made by a group or a single expert? The controversy over the relative merits of individual and group problem-solving illustrates the nature of the difficulty.

It is possible, of course, that the two criteria of "fairness" and "group effectiveness" will turn out not to be incompatible. Many advocates of democracy claim that in the long run a group decision which best reflects the preferences of the members will also result in optimal group effectiveness. This problem is considered in more detail in Part Five. It should be clear that the issue can be resolved, if ever, only on the basis of patient research into the nature of group decision-making, its determinants and consequences.

Participation and power. Instead of asking how individual goals for the group should be converted into a group goal, one may ask how the conversion actually does take place. Research conducted to date combines with everyday experience to focus attention on one aspect of group goal-setting: most groups fail, in some degree, to meet the "fairness" criterion in forming their goals. Two interrelated factors—differences among members in participation and differences among participants in the amount of influence exerted—appear most commonly to produce deviation from the state where the preferences of all members have equal weight in the formation of group goals.

With respect to the first factor, it is clear that the determinants of participation in group goal-setting are many and varied. Research like that of Stephan and Mishler (22) demonstrates that even when conditions are optimal—the group is small and group standards call for full participation—members do not usually participate equally. Some members may lack self-confidence, some may find it difficult to engage in social interaction. But it is also evident that conditions are not usually optimal for full participation. Many groups, especially larger and more formalized ones, have specialized the function of decision-making. Group goals, in such groups, are set by committees, boards, or executives. The

participation of others in setting the goals of the group is not expected, or it may even be prohibited. When decision making is located in a subpart of the group, provision is often made so that the interests of the other members are "represented" in some way. Coch and French show in Chapter 18 that such representation can serve as a sort of vicarious participation, but little evidence is available to provide a full understanding of the social psychology of representation.

Even if we confine our attention to the people who participate directly in the setting of a group goal, we find that differences may exist among them in the influence exerted by each. A person who, for any reason, can get others to accept his point of view is thereby able to increase the likelihood that his personal preferences for the group will be reflected in the group goal selected. (Further discussions of the nature of social power may be found in Chaps. 32, 38, and 39.)

The many determinants, both formal and informal, of participation and power combine in some fashion to create among the members of a group a particular distribution of influence over each group decision. Tannenbaum and Kahn (25) have developed a method for studying the perceptions people have of the customary locus and distribution of control in a group over decision-making. On the basis of interviews with group members, these investigators are able to construct a "control graph" of the group. Along its horizontal axis are indicated subparts of the group; e.g., in a labor union these might be "local membership," "plant bargaining committee," "executive board," and "president." On the vertical axis is shown the amount of control over group decisions (how much "say") each subgroup is reported to have. Groups may differ greatly in the shape and general level of these control curves. Employing this method in the investigation of union locals, Tannenbaum and Kahn have found that the membership may gain a sense of control over group decisions in at least four ways: attending meetings of the local, participating in various informal and representational activities, having the right to ratify decisions made by others, and being able to recall from office those in decision-making positions. A belief by the membership that they have a reasonable control over group decisions seems to generate an interest on their part in the goals of the union, but this does not appear to be a necessary condition for the development of loyalty to the union. Similar research in a variety of groups and organizations could rapidly advance our understanding or the determinants and consequences of group decision-making.

Cognition and motivation. A close look at what goes on among a group of people when they are attempting to form a group goal will reveal both cognitive and motivational aspects. Cognitive processes are evident in the search for agreement about the facts relevant to the decision. "If we

were to engage in this project, would we actually achieve our goal?" "How would others react?" "Would the group's resources be sufficient to assure success?" The search for answers to questions such as these involves an exchange of information and opinions, and the two sources of pressures to uniformity (need for social reality and for group locomotion) discussed by Festinger in Chapter 16 may be expected to exert a strong influence on the members of the group. But agreement is ordinarily not enough; the members want to achieve a "correct" consensus. The quality of any group decision will depend in part upon the degree to which it rests upon an accurate assessment of facts and reflects intelligent problem solving. An excellent treatment of the many factors which affect the quality of group problem-solving has been provided by Kelley and Thibaut (12).

It is possible, of course, for a group of people to agree on the pertinent facts, to solve their cognitive problems effectively, and still to disagree as to what the group goal should be. If the motives of different members are incompatible (if they have conflicting interests), the selection of a group goal will still be difficult. Under these conditions, the members are likely to engage in bargaining, maneuvering for power over the decision, and forming coalitions. Despite the prevalence of these phenomena in groups and their dramatic nature, little definitive knowledge about them has yet been acquired. The theory of games provides a theoretical model, but its empirical applicability has thus far been disappointing. An alternative theory of coalition formation, proposed by Caplow (6), has gained reasonably good support from data obtained by Vinacke and Arkoff (27) in an experiment on three-person groups. The theory is also generally consistent with the results reported by Mills in Chapter 40. It is clear, however, that variables in addition to those considered by the theory must be taken into account since Strodtbeck (24) has shown that groups formed by three members of the same family behave somewhat differently from Mills' temporary groups. Further research on the formation of coalitions, bargaining, and mediation of conflicts is badly needed. Such research could be profitably guided by the theoretical analysis conducted by Cyert and March (7).

The relative emphasis on cognitive and on motivational processes in decision making may vary from one group to another and within the same group at different times. March and Simon (17) have advanced the hypothesis that when a group has an accepted, operational superordinate goal, differences of opinion about subgoals will be resolved by predominantly analytic processes, i.e., by the analysis of expected consequences of courses of action directed toward each subgoal. On the other hand, when superordinate goals are nonoperational, the decision will be reached by predominantly bargaining processes. In other words, the

general acceptance of an operational superordinate goal results in a greater emphasis on the cognitive than on the motivational aspects of group decision-making. One might expect, also, greater emphasis on the cognitive aspects the more members are "task oriented" or "group oriented" rather than "self-oriented" and the more they see their basic relationships as promotively interdependent.

Effects of Group Goals

We may now ask what effects are produced by the existence of a group goal and by its specific nature. Once a group decision is reached, by whatever means, it may be expected to exert influences of various sorts over the behavior of members, their interactions, and their evaluations of one another.

Group Goal as an Inducing Agent

In order to account for the fact that a group goal can steer the behavior of group members to perform certain activities rather than others, it is necessary to recognize that the group goal itself can be a source of influence upon the group members. Once a particular group goal has been established, "good" group members are expected to work toward its attainment even when their preferred goal has not been chosen. In actual fact, of course, various group members are influenced to various degrees by various group goals. For this reason, a satisfactory conception must recognize that a group goal can induce motivational forces upon members and the magnitude of such influence can vary quantitatively among goals and among members.

In Chapter 20 Horwitz reports the results of an experiment in which groups selected a goal and attempted to attain it. He found great individual differences in the degree to which members accepted the group's decision concerning its goal. He found also that those who most fully accepted the group goal displayed most strongly need tensions to have the group achieve its goal, those who merely acquiesced mobilized less need tension, and those who rejected the group decision tended to persist in their personally determined motivation. These findings make it clear that when a group goal is fully accepted by the members it will have power to influence their behavior. If the group goal is not accepted by a significant portion of the group, we should expect to find relatively poor coordination of efforts and a relatively high incidence of self-oriented rather than group-task oriented behavior.

Many factors undoubtedly influence how readily a member accepts a group goal. One of the more important of these would seem to be the

member's assessment of the consequences to him of accepting it. If he believes that the group goal represents satisfactorily his personal motives, he should readily accept it since attainment of the goal by the group promises personal satisfaction. The often observed increase in motivation among members following participation in group goal-setting may derive in part from a superior "fitting" of members motives and group goals brought about by such participation. To the extent that a member's satisfaction depends upon the group's successful achievement of its goal, his assessment of the probability of group success may also be expected to influence his acceptance of the group goal. Raven and Rietsema report in Chapter 21 findings from an experiment which varied the clarity of the subjects' understanding of the group goal and path to the goal. They found that those with a clear picture had a closer involvement with the group goal, more sympathy with group emotions, and a greater readiness to accept influence from the group, than those who were unclear about the goals and paths of their group.

Findings like those reported in Chapters 15 and 16 which show that group cohesiveness heightens the power of the group over its members, suggest that acceptance of group goals will also depend considerably upon the degree to which members are attracted to membership in the group. Although it is not definitely known whether all bases of attraction to a group have precisely the same effects upon the power of the group, there is good reason to believe that groups whose members like one another as people, groups that mediate personal need satisfaction, and groups having high prestige can all exert strong pressures upon members to accept group goals. Given correct knowledge about the nature of the group task-requirements, such groups should perform with relatively good effectiveness.

In considering the ways in which group goals come to steer the behavior of members, we must recognize that in many groups the members are unaware of group goals, uninterested in them, or both. Such a state of affairs is more likely in larger groups, when membership is involuntary, or when membership is maintained merely as a means of earning a living. It is not uncommon for employees of a business firm to view their relationship to the organization as a purely contractual one in which their time and talents are purchased by the firm. Under such circumstances members expect to do whatever their supervisor's tell them to do without being concerned about the contribution of their behavior to group locomotion. Here, the quality of their contribution to group success will depend primarily on their relations with supervisors and on the skill of supervisors in designing behaviors which will successfully meet the task requirements. The burden of supervision may

be expected to be especially great under these conditions since rank and file members are little concerned with the goals of the group.

If the behavior of members is steered by commands of supervisors, the situation is bound to arise more or less frequently when the ordered behavior is in conflict with the members' personal preferences. A state of conflict is thus generated, which may be expected to produce emotional tension and possibly hostility. That rather unexpected consequences may follow from "forced compliance," however, is demonstrated by Festinger and Aronson in Chapter 12. The ramifications for interpersonal relations, subgroup formation, and self-esteem need further investigation.

Interdependence among Members

We have seen that when the members of a group accept a group goal they experience satisfaction or frustration, depending upon what happens to the group as an entity. This common dependence on the fate of the group tends to make members interdependent, for if one member performs an activity which helps the group reach its goal he thereby improves the probability for each other member that he will gain satisfaction. In Chapter 22 Deutsch presents a conceptual scheme for predicting various consequences from this state of interdependence among members of a group. He argues that the cooperative situation created by the existence of a group goal tends to produce (*a*) a readiness to substitute one member's activities for another's, since each person's activity is evaluated not by who does it but by its contribution to progress toward the goal; (*b*) a cathexis, or attraction of members for one another, since each contributes to the other's progress toward the goal (even when striving for his own satisfaction); and (*c*) a readiness to accept influence attempts from other members, since all see that they are helping one another. Following this line of reasoning further, Deutsch makes a series of predictions about the effects of cooperation (in contrast to competition) upon various features of group organization, motivation of members, and effectiveness of group functioning. These predictions are then given an empirical test in a classroom setting.

Thomas extends this approach in Chapter 23 by introducing certain conceptual refinements. He notes that, when people are interdependent because they accept the same group goal, their actions may facilitate or hinder the achievement of the group goal. For this reason, one cannot assume that the existence of a group goal will inevitably generate positive attitudes among members. The nature of task assignments to individuals and the quality of their performance may be expected also to

terdependent in such a way that, if one member helps the group move toward its goal, he thereby improves the chances of satisfaction for all members. As a result of such mutual facilitation the members tend to develop a feeling of responsibility to the group, a readiness to help one another, a favorable evaluation of one another, and a willingness to be influenced by one another. These effects, in turn, improve the quality of group performance.

The final chapter of this section presents a theoretical analysis by Thompson and McEwen of some of the determinants of goal setting. They are especially interested in the conditions in the social environment of organizations which exert an influence upon their choice of goals. This analysis serves to strengthen the position, advocated in the present chapter, that group goals should not be conceived as solely determined by the motives of members. Although Thompson and McEwen concentrate their discussion on large and complex organizations, it seems that analogous considerations are applicable to even small and informal groups.

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20

The Recall of Interrupted Group Tasks: An Experimental Study of Individual Motivation in Relation to Group Goals

Murray Horwitz

The general problem considered in this research is the following: Can the motivational concepts which have been developed for individuals who are acting for their *own goals* be applied to individuals who are acting so that a group will achieve *group goals?*

The concept of group goals appears in one form or another in most theories of group functioning. Barnard's (2) concept of group effectiveness and Homans' (7) of group activities both involve the notion of particular outcomes which the group can achieve in its external environment. French (5), in his studies of group productivity, makes explicit use of the concept of group goals, but distinguishes conceptually the two types of goals by locating each in a different type of environment. He follows Lewin (13) in describing the individual's behavioral environment in terms of the possible activities existing for the person, and locomotion through this environment as a change in the person's position in the sense of moving from one activity to another. The individual's goal is treated as a consummatory activity which terminates a sequence of other activities which lead up to it. Analogously, the group's behavioral environment is regarded as consisting of possible activities in which the group can engage. Group activities, however, are carried on, not by the separate activities of individual members, but by the organization of these individual actions within the group. Locomotion toward a group goal involves a change of position by the group, and for this reason, although a member may contribute in some degree to the group's moving toward its goal, neither the locomotion nor the goal can be said to be achievable by any individual in the group. As in the case of an individual goal, the group

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goal is consummatory in that it terminates a sequence of group activities.

A number of studies have examined the motivation of group members as related to group goals. Lippitt (16) found that in certain types of children's groups members persisted in working on a group task although the leader had left the room, while in others work ceased when pressure from the leader was removed. The studies by Katz (9) and the numerous investigations of "group identification" reported by Sherif and Cantril (21) indicate that under some conditions members can become motivated in terms of group goals, while under other conditions they act without such motivation. From the standpoint of motivational theory in individual psychology, these studies raise the problem of how goals which represent changes in the state of a group can be conceptually linked with goals which are consummatory activities of the person himself.

In individual psychology, the existence of some internal system in tension, e.g., a need, is usually taken as a necessary condition for the person's having a goal. According to this view tension systems result in the individual's "cathecting" some goal in the environment, and tendencies are then aroused for the person to locomote toward this desirable outcome. Lewin (12) has given a rather elaborate systematic treatment of the properties of tension systems, based primarily on experiments which have treated the individual in isolation from the social field. In measuring tension systems, the Lewinian experiments on individuals involve the general procedure of providing the subject with a series of tasks which he desires to complete, having the subject engage in activities directed to this end, and interrupting some of the tasks but allowing others to be completed. There are several features of this experimental procedure which prevent our generalizing the results obtained to the behavior of individuals in a goal-setting group:

1. The "interrupted task" experiments indicate that individuals develop tension systems coordinated to reaching their own goals. Group goals, as we have seen, cannot be attained by an individual. The question is raised whether individuals can develop tension systems coordinated to the group's attaining its goal; and, if so, does the group's reaching its goal reduce tension in the same way as "consumption" by the individual?

2. In experiments with individuals the subject engages in a sequence of activities which will enable him to complete the task. The individual's environment is regarded as a stable and relatively invariant frame of reference, locomotion being treated as the person's changing his position within this environment. A characteristic of behavior in a social field, however, is that desirable or undesirable states of affairs may come about by changes in the social environment, independently of the individual's action. A change in the person's position, i.e., locomotion, can occur not only by his entering into a new activity, but by the "ground moving under

his feet." Even though the person is himself inactive, he may find himself psychologically "carried" toward or away from a goal or toward or away from an avoidance by the action of the group. The results of experiments with individuals do not permit us to answer the question: Will tension systems be reduced where the person has not actively completed the task but has to some degree been "carried" by the group into a condition in which the task has been completed?

3. In the individual experiments the tension systems which are measured are coordinated to completing a task. In a group situation a person may wish to avoid completing a task which he may nevertheless be obliged to complete by virtue of his membership in the group. If tension systems exist coordinated to avoiding a task, one would expect these avoidance tensions to have somewhat different properties from goal tensions; for where non-entry into the region of negative valence should reduce an avoidance tension, non-entry into the region of positive valence should leave the goal tensions unreduced. On the other hand, entering a region of negative valence should leave an avoidance tension unreduced, although entering a region of positive valence should reduce the goal tension. The experimental procedure used with individuals has made it difficult to investigate avoidance tensions. Do tension systems, in fact, exist for avoidances as well as goals? If so, what are the properties of avoidance tensions?

4. In the individual experiments, the subject is either allowed to choose his own tasks, or is provided tasks in which he will be interested. However, a group may set a goal in the absence of an individual member's tension system, or even in opposition to it. Thus, differences may occur between the particular goals set by the group and the goals which the individual desires the group to set. What, if any, are the effects on tension systems of members' attitudes toward undesired group goals?

Previous Research

Zeigarnik (22), in the earliest experimental work using the tension system construct, coordinated an inner-personal system in a state of tension to the person's striving toward a goal. If the person reaches the goal, the tension is assumed to be reduced; if he is interrupted short of the goal, the system remains in a state of tension. Zeigarnik demonstrated that interrupted tasks are more frequently recalled than completed tasks.

The question of the effects of events in the social field on the arousal of tension systems in the person was first explicitly raised by Adler and Kounin (1). These investigators found that another person's unfinished task failed to arouse tension systems in an observer. Lewis (14) was justly critical of the conclusions drawn from the negative results of this experi-

ment, in which there was little interdependence between the two individuals involved. Lewis set up an experimental situation in which a subject worked on a set of tasks, half of which he finished, the other half being interrupted by a cooperating partner who proceeded himself to finish the tasks. No significant difference was found between recall by a subject of tasks which he completed personally and those which were interrupted and completed by his partner. The result is interpreted to mean that one's tension-system can be reduced by another's reaching his own goal. This still leaves open the question whether tension systems can be aroused for non-personal goals. In a second experiment, Lewis and Franklin (15) had the subject and one of the experimenters work together on the tasks. The second experimenter interrupted half the tasks, setting them aside. The number of subjects who recalled more interrupted than finished tasks proved to be significantly above chance. This experiment touches directly on the question: Given a group goal does an individual develop tension systems coordinated to the group's reaching its goal?

Unfortunately, although this second experiment points to a method for investigating the question, it does not provide the answer. In analyzing the task structures of the 18 problems, Lewis indicates that some of the problems were seen by the subjects as allowing the two partners differential responsibility for the results. Tasks which required an exchange of ideas between the partners might not, for example, incorporate some of the subject's ideas in the solution. They might, therefore, be regarded by him as unfinished, leaving him with an undischarged tension. Other tasks might be seen as consisting of separate halves, one belonging to one partner and the other to the other. In the words of one subject, "Some we divided up. You finished your part and I finished mine." One cannot, therefore, determine whether the tension systems aroused in Lewis' experiment were related to a desire to complete a group task or to complete some part of a group task which was regarded by the individual as his personal goal.

Experimental Procedure

Subjects

The subjects were female students recruited in groups of five from sororities at the University of Michigan. There were 18 such groups, two of which lacked one member. The experiment was explained as a test of group cooperativeness which would be judged by the quality of the group's performance in working together on a number of jigsaw puzzles. The situation was presented as a contest in which each team represented its sorority. In the main the teams consisted of volunteers, although in

some instances they contained persons specifically designated by sorority officers.

Developing Motivation for the Group Task

Upon entering the experimental room the subjects were engaged in a group discussion for about 15 minutes, designed to heighten their awareness as group members. After the five subjects appeared to be thoroughly involved in the discussion about their group, they were asked to take seats in one of five booths set side by side. Partitions between them prevented subjects seeing one another, but all could see the experimenter who took his place at a table in front of the booths. At each workplace within a booth was a one-page questionnaire, entitled "Test on Group Loyalty," which was aimed at increasing the subjects' involvement in working toward a group goal. The questionnaire contained five scales on which the subjects were asked to rate "the loyalty and team spirit of your group," "your respect for the will of the group," "your readiness to go along with a group decision with which you disagree," and finally, "how much you desire the group to do well on this test."

Explaining the Procedure on the Task

A cardboard poster (size 14″ x 14″) was attached by means of a spring clip to a display board on the experimenter's table. Drawn on the poster was the outline of a figure, sectioned into five parts to represent a jigsaw puzzle. There were 17 such figures, two of which were used for demonstration purposes. The group's task was to attempt to direct the experimenter in filling in each of these "target" figures one piece at a time. Each subject communicated with the experimenter by a system of signals without knowledge of what others in the group were signaling.

In an envelope at her workplace each subject had four differently shaped pieces of cardboard, each of which was cut out to correspond with a section of the jigsaw "target" figure. By holding up one of these pieces, the subject could signal to the experimenter which section of the figure should be filled in. According to the instructions, if a given number of people and *no more* than that held up the same piece then the corresponding section of the jigsaw figure would be filled in by the experimenter. The effect of this rule was that those subjects who had not held up the piece could claim credit for keeping the number below the maximum, so that it was impossible to say that any member contributed more than another to the successful placing of a piece. The subjects would hold up their choices on successive trials, and the experimenter would announce whether or not the correct number of subjects were holding up the same

piece. The trials were continued until the experimenter announced that the correct number of subjects were holding up a given piece, whereupon the experimenter would fill in the corresponding section of the jigsaw figure. The group then engaged in a second series of trials until they succeeded in filling in another section of the figure. This process continued until the entire figure was completed.

Explaining the Method of Voting and Scoring

After the procedure had been explained to the group, the method of scoring was described. The method entailed taking a vote at the midpoint of each of the 15 puzzles, and was designed to allow members to express their personal decisions either for or against completing the puzzle.

Two demonstrations were given to enable the subjects to learn the procedure in solving the task, and to set up the routine on voting. Votes were always taken after two of the five pieces had been placed on the figure, the experimenter announcing, "I have the basic score. Does the group want to stop here or complete the puzzle?" The subjects voted, without knowledge of how their fellow members were voting, by raising their right hands if they wished to continue work or their left hands if they wished to stop. The experimenter then announced the outcome of the vote. If the announced majority decision was to "complete the puzzle," work was continued in trying to place the third piece; if the announced decision was to stop, the puzzle was set aside, and work was begun on the next puzzle.

Administering the Experiment

In signaling their individual choices, both in filling in the figure and in voting, the subjects could not see one another and had to depend entirely on the experimenter for announcement of the results. The experimenter was therefore able to make his announcements according to a prearranged experimental plan. Standard sequences for filling in the various sections of the figure were planned in advance for all groups. After from four to six trials, irrespective of the actual pieces being held up by the subjects, the experimenter would announce that the correct number of subjects were holding up the piece which had been selected in advance, and the experimenter would then set this piece on the figure. Although nothing the group did made any difference in how the pieces were being placed on the figure, the experimenter's control of the "feedback" served to maintain the illusion that the group was solving the task in its own way. In a similar fashion, it was possible to follow a prearranged experimental plan in announcing the results of the voting. On five puzzles

selected in advance, no matter how the group actually voted, the group was told that a majority had voted "no," or *not* to go on with the work. On 10 selected puzzles, the group was told that a majority had voted "yes," in favor of continuing work. Of these 10 tasks, the group completed half, and half were interrupted by the experimenter. The interruption, which came in the middle of work on the third piece, was described as temporary and the subjects were told they would return to their work later.

There were thus three treatments for the 15 tasks: an announced "yes" vote, followed by completion of the task (designated hereafter as *Y-C*); an announced "yes" vote, followed by partial completion and interruption (designated as *Y-I*); and an announced "no" vote, with work stopping (designated as *N*). At the end of the series of tasks, the subjects were requested individually to recall the names of the jigsaw figures. The instructions were designed to minimize the recall as a "memory test" which, as Zeigarnik (22) has shown, tends to equalize recall of finished and unfinished tasks.

The lists of recalled tasks constitute the basic data of the experiment. Each task on a subject's list could be identified as receiving a specific one of the three experimental treatments. Each type of task could be further broken down into two groups, according to whether the subject's personal vote had been "yes" or "no."

Experimental Design

The strength of recall of tasks *for a given treatment* is measured by the ratio:

$$\frac{\text{Number of recalled tasks}}{\text{Total number of tasks in treatment}}$$

Since recall will be affected by the serial order of the tasks and by the "intrinsic" recall value of each figure, it was necessary to equalize these two factors among the three treatments. This could be achieved by presenting the 15 figures in the same order for all 18 groups, but alternating the treatment in successive groups. Thus a given task would be treated in one group as a *Y-C* task, in the next group as a *Y-I* task, and in the next as an *N* task.

Certain departures from this scheme were required by the following additional experimental requirements:

1. The first puzzle in the series should be a *Y-C* task, since an initial "no" vote might suggest to the subjects that their fellow members were rejecting the experiment, and an initial *Y-I* treatment, in which the experimenter interrupted the task, might cast doubt on his intention to respect the group's decision.

2. No two *Y-I* tasks should succeed each other without the interposition of a *Y-C* task in order to avoid any suggestion that the experimenter intended consistently to deny the subjects' decision to complete a task.

3. No contiguous tasks in the series should receive the same treatment.

In summary, each subject was exposed to 15 tasks, five tasks in each of the three treatments *Y-I*, *Y-C*, and *N*. The ratio of tasks recalled within a given treatment to total tasks within that treatment was computed for each subject. The means of these recall ratios were computed for the 15 subjects belonging to the three groups within a complete rotation. This yielded three scores representing strength of recall of *Y-I*, *Y-C*, and *N* tasks, respectively. Since 18 groups were employed, we have a total of six rotations or, in effect, six replications of the experiment.

Theory and Results

The Psychological Situation of the Group Member

The group goal for these competing teams can be characterized as "getting as many points as possible." This goal can be represented in a social space as a consummatory activity toward which the group is locomoting. If the group votes "yes," the path along which the group is acting may be represented as one in which the activity, "completing the task," is connected with the goal. If the group votes "no," the activity of "completing the task" is connected with a region of negative valence, namely, "losing points."

One can deal with these group activities entirely within a social space without reference to the life space of any individual member. Nevertheless, to the extent that the instructions and recruiting procedures of the present experiment were effective, we can say that each subject had a personal goal of seeing the group obtain the best possible score. Within the individual's life space this goal can be represented as a state region [1] which can be designated, "condition where the group has gained points." Whether or not the person finds himself "carried" into this region of his life space depends in the present situation on events in the group or social space.

At the time of voting whether or not to complete the puzzle, the psychological situation of members who vote "yes" can be represented as in Figure 25.1*a*. This representation indicates that any one person so voting believes that he can locomote through activity region *C*, "working on the task with others," into the state region *D*, "condition where the group has completed the task." In view of the member's belief about the conse-

[1] We follow Lewin here as opposed to Leeper (10) in coordinating states as well as activities to regions in the life space.

quences of completing the task, region *D* is included in the region of positive valence, *D′*, "condition where the group has gained points." The shaded region inside the person, t^c, (tension for completion) indicates the existence of a tension system corresponding to the person's desire to see

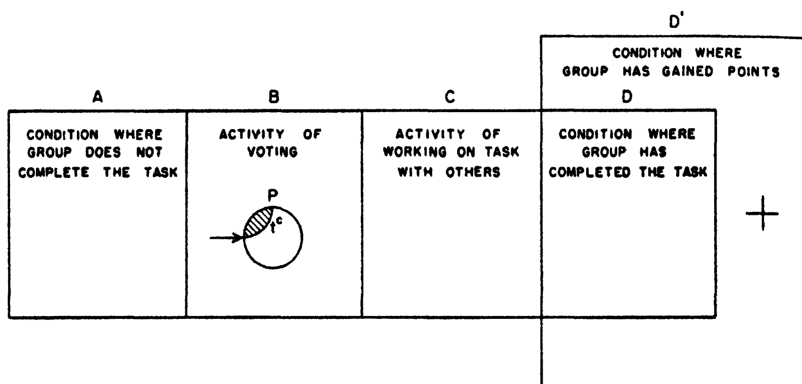


FIG. 25.1*a*. The psychological situation of the member in case of a "yes" vote.

the task completed. If the person enters the region of task-completion, *D*, the tension system, t^c, should be reduced.

Figure 25.1*b* represents the situation of members who vote "no." Here the person believes that entering region *D* will entail a loss of points. Therefore region *D* is included in a region of negative valence. The tension system, t^a, (tension for avoidance) corresponds to the individual's

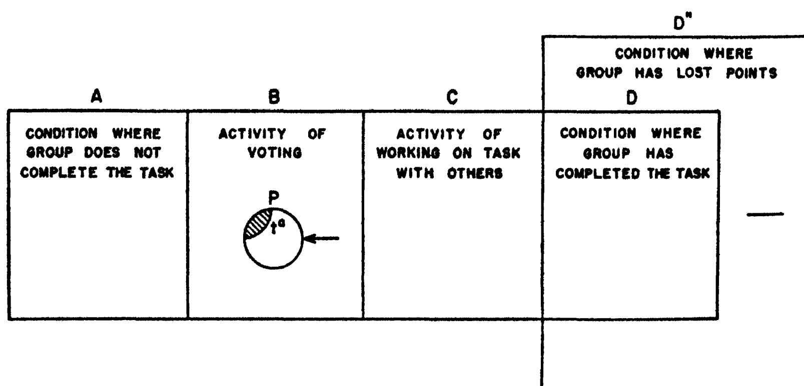


FIG. 25.1*b*. The psychological situation of the member in case of a "no" vote.

desire to avoid completing the task. We hypothesize that tensions for avoidance are reduced where the person locomotes into a position which removes the possibility of his entering the region of negative valence. In the situation of the present experiment the direction of locomotion is

irreversible after the first step along the path, and t^a should be reduced upon *P*'s entering region *A*, "condition where the group does not complete the task."

The concept of a state region has been used in these representations to deal with the fact that if a group attains its goal, or in any other way changes its position within its social space, this event will produce a change in the member's position within his own space. Even though the member has been passive, and has taken no active part in the group's reaching its goal, he will have been "carried" by the group action into a new condition or state. State regions are distinguished from activity regions in that locomotion into or through the former depends, at least in part, on the person's being transported by some outside agent. In all other respects we assume that they have the same properties as activity regions.

Tension Systems for Group Goals and Avoidances

An individual may disagree with the group's decision to complete or to avoid a given task. For simplicity, however, we make the working assumption—which will be evaluated below—that following the announcement of the group decision members will tend to agree with the group about the desirability or undesirability of completing the task.

On this assumption, if the group sets a goal of task-completion, the corresponding state region of the member will tend to have a positive valence. The member will thus have a tension system for completion which (*a*) will be reduced if the member is transported into the state region "condition where the group has completed the task" (experimental treatment *Y-C*); or (*b*) will remain in a state of tension if the member is not transported into this desired state region (treatment *Y-I*).

If the announced group decision is "no," we assume that in the subject's life space the region, "condition where the group has completed the task," tends to have a negative valence, and that the member has an avoidance tension system which (*a*) will be reduced if the member is transported into the state region, "condition where the group has not completed the task," and there is no longer any possibility of the individual's being transported into the region of negative valence (treatment *N*); or (*b*) will remain in a state of tension if the member remains in a position from which it is possible that he will be transported into the region of negative valence (which might result if the group were told that they would return to tasks on which they had voted "no").[2]

These hypotheses assert that tensions are reduced for tasks in the *Y-C*

[2] No direct test was attempted for the hypothesis that avoidance tensions would remain unreduced if the group were told they would return to *N* tasks. It was feared that if the group were made to act against its expressed decision to halt work, the

and *N* treatments and that tensions are not reduced in the *Y-I* treatment. Assuming that the level of recall of tasks within a treatment is directly related to tension level, there follows:

Hypothesis 1. % recall *Y-I* > % recall *Y-C* = % recall *N*.

Table 25.1 gives the data on recall of tasks for the three treatments,

TABLE 25.1

PERCENTAGE OF TASKS RECALLED UNDER THREE DIFFERENT EXPERIMENTAL TREATMENTS

ROTATION	TREATMENT								
	Y-C			*Y-I*			*N*		
	Total Tasks	# Recalled	*X* (%)	Total Tasks	# Recalled	*X* (%)	Total Tasks	# Recalled	*X* (%)
1	75	35	.467	75	40	.533	75	31	.413
2	70	31	.443	70	35	.500	70	36	.514
3	75	33	.440	75	42	.560	75	35	.467
4	70	35	.500	70	41	.586	70	29	.414
5	75	32	.427	75	42	.560	75	38	.507
6	75	29	.387	65	40	.615	70	31	.443
Mean			.444			.559			.460

Y-I, Y-C, and *N*. The mean percentages of tasks recalled by the subjects in each of the six rotations are .559 for treatment *Y-I*, .444 for treatment *Y-C*, and .460 for treatment *N*. By analysis of variance into three components, the influence of treatments on strength of recall is found to be highly significant ($P < .01$). By *t*-tests we find that the mean recall score for *Y-I* tasks is significantly greater than either the mean recall scores for *Y-C* tasks ($P < .01$) or for *N* tasks ($P < .01$). On the other hand, there is no statistically significant difference between the mean recall scores for *Y-C* and *N* tasks ($P = .59$). These results confirm the hypothesized relationships expressed in Hypothesis 1, above.

Effects of the Interaction of Individual and Group Decisions on Tension Systems for Group Goals

We made the working assumption above that members will tend to agree with the announced group decision. It is to be expected in some instances at least that members whose votes were opposed to announced

members would become skeptical of the genuineness of their power to make decisions. However, we show below that avoidance tensions remain unreduced where individuals desire to avoid a task but are moved toward task-completion by the action of the group.

results of the group voting would adhere to their original points of view.

Where a member's original vote is "yes," we designate this vote in combination with each of the three experimental treatments as *y Y-C*, *y Y-I*, and *y N*, respectively. Individual and group decisions are in agreement for the situations *y Y-C* and *y Y-I*, and we should expect as above that completion of the task will reduce tension systems for *y Y-C* tasks, and that interruption of the task will leave the tension unreduced for *y Y-I* tasks. In situation *y N*, individual and group votes are in disagreement. If the person persists in holding to his own "yes" vote, his tension system for completion will remain unreduced where the group votes "no" and halts work. If, however, the individual "changes his mind," and accepts the judgment expressed by the group, then the avoidance tension which is aroused should be reduced by the group's halting work. On the assumption that sometimes individuals will change their minds and sometimes not, tensions will sometimes be reduced in the *y N* situation and will sometimes remain unreduced. The level of recall of *y N* tasks should, therefore, be somewhere between recall of *y Y-I* tasks (where tension is not reduced) and recall of *y Y-C* tasks (where tension is reduced). This may be formulated as:

Hypothesis 2. % recall *y Y-I* > % recall *y N* > % recall *y Y-C*.

The percentages of tasks recalled are .560 for *y Y-I* tasks, .477 for *y N* tasks, and .412 for *y Y-C* tasks (Table 25.2), analysis of variance indicating that the influence of these situations upon recall is highly significant ($P < .001$). Testing pairs of means by the *t*-test, it is found that recall of *y Y-I* tasks exceeds the recall of both *y N* tasks ($P < .01$) and *y Y-C* tasks ($P < .001$). Recall of *y N* tasks, moreover, is greater than recall of *y Y-C* tasks ($P < .02$). The results confirm the relationships expressed in Hypothesis 2.

Turning now to the situation where the person's original vote is "no," the three possible situations are designated *n Y-C*, *n Y-I*, and *n N*. In situation *n N*, individual and group decisions are in agreement, and the avoidance tension coordinated to a "no" vote should be reduced by the group's stopping work. In situation *n Y-C*, if the individual persists in his personal vote of "no," the avoidance tension will not be reduced; for the task is completed by the group, and the individual is transported into the region he desires to avoid. If, on the other hand, this member accepts the group vote of "yes," the resulting tension system for completion will be reduced upon the group's completing the task. Since, however, tension should not be reduced where the person rejects the group decision, the recall of tasks in situation *n Y-C* should be greater than recall of tasks in situation *n N*. In situation *n Y-I*, it is to be expected that tension systems will remain unreduced whether the person accepts or rejects the group vote. If the person adheres to his "no" vote, his avoid-

TABLE 25.2

PERCENTAGES OF TASKS RECALLED UNDER SITUATION *y Y-I*, *y N*, AND *y Y-C*, BASED ON POOLED DATA FOR ALL INDIVIDUALS WITHIN EACH OF SIX ROTATIONS

ROTATIONS	TREATMENTS								
	y Y-I			*y-N*			*y Y-C*		
	Total Tasks	# Re-called	*X* (%)	Total Tasks	# Re-called	*X* (%)	Total Tasks	# Re-called	*X* (%)
1	53	27	.509	43	22	.512	48	18	.375
2	53	28	.528	44	21	.477	56	25	.446
3	55	32	.582	55	29	.527	54	22	.407
4	48	27	.562	48	19	.396	55	25	.454
5	63	36	.571	52	26	.500	54	23	.426
6	51	31	.608	56	25	.446	58	21	.362
Mean			.560			.476			.412

ance tension will not be reduced, because treatment *Y-I* implies that it is still possible that the group will complete the task, transporting him into the region of negative valence. If the person accepts the group vote of "yes," interruption on the task prevents reduction of the tension for completion. With tensions remaining unreduced in both cases, recall of *n Y-I* tasks should exceed recall in either of the other two situations. This may be expressed as:

Hypothesis 3. % recall *n Y-I* > % recall *n Y-C* > % recall *n N*.

Percentages of recall are .547 for *n Y-I* tasks, .525 for *n Y-C* tasks, and .427 for *n N* tasks (Table 25.3). The results are in the predicted rank order,

TABLE 25.3

PERCENTAGES OF TASKS RECALLED UNDER SITUATIONS *n Y-I*, *n Y-C*, AND *n N*, BASED ON POOLED DATA FOR ALL INDIVIDUALS WITHIN EACH OF SIX ROTATIONS

ROTATIONS	TREATMENTS								
	n Y-I			*n Y-C*			*n N*		
	Total Tasks	# Re-called	*X* (%)	Total Tasks	# Re-called	*X* (%)	Total Tasks	# Re-called	*X* (%)
1	22	13	.591	27	17	.630	32	9	.281
2	17	7	.412	14	6	.428	26	15	.577
3	20	10	.500	21	11	.524	20	6	.300
4	22	14	.636	15	10	.667	22	10	.454
5	12	6	.500	21	9	.428	23	12	.522
6	14	9	.643	17	8	.470	14	6	.428
Mean			.547			.524			.427

although analysis of variance applied to these data does not permit us to reject the null hypothesis ($P = .20$). The data give partial confirmation of the relationships involved in Hypothesis 3, but the recall of *n Y-C* tasks is unexpectedly high, approaching within two percentage points the level of recall for *n Y-I* tasks.

We shall present here an interpretation of the relatively high level of recall of *n Y-C* tasks, which it will be possible to test by additional data in the experiment. Both *n Y-C* and *y N* tasks, as we have noted, are characterized by disagreement between personal and group decisions. In both, our theory requires that tensions should be reduced if the person accepts the group vote which disagrees with his own; and, in both, tensions should not be reduced if the person rejects the group vote.

An analysis of situation *y N* is presented in Figure 25.2*a*. At Time 1, when the person casts his original vote, a tension system for task-comple-

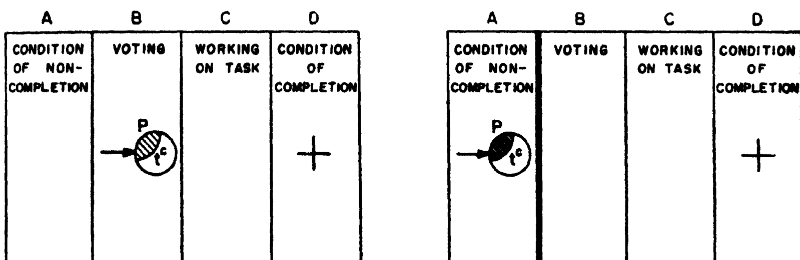


FIG. 25.2*a*. **The psychological situation of the member who votes "yes" and rejects the group vote of "no" (situation *y N*). Representation is based on Fig. 25.1*a*; region *D′* is omitted for economy of presentation.**

tion exists, and a force is acting on the person in the direction of the positively valent region, "condition where the group has completed the task." At Time 2, the group has voted "no" and has halted work. This is conceptually equivalent to introducing an impassable barrier in the individual's life space, which blocks locomotion toward this goal. The significant feature of this situation for our purposes is that the person has not been moved closer to the goal as a result of the group action. There should, therefore, be no increase of the force acting on him by virtue of the goal-gradient effect (17). Indeed, we may regard the person as having been moved by the group to a greater psychological distance from the goal, in which case the force toward the goal will be decreased.

In situation *n Y-C* there is a marked difference. Here the person wishes to avoid completing the task, but he is not merely blocked by the group action; he is coerced into working on the task "against his will." The

conceptual analysis is presented in Figure 25.2*b*. At Time 1, when the member casts his original "no" vote, there is a tension-system for task-avoidance. A force is acting on the person in the direction away from the region "condition where the group has completed the task," which is now represented as having a negative valence. The effect of the group's completing the task at Time 2 is to transport the person into this region of avoidance, after which he is blocked from leaving it by an impassable barrier (since in the present experiment the completed task cannot be undone). The feature of the situation we wish to stress here is that the person has been moved closer to—in fact, inside—the region of avoidance.

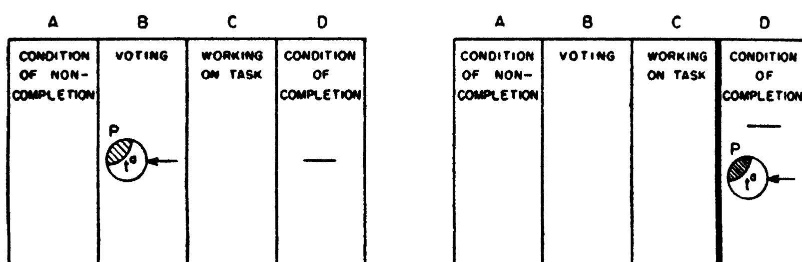


FIG. 25.2*b*. The psychological situation of the member who votes "no" and rejects the group vote of "yes" (situation *n Y-C*). Representation is based on Fig. 25.1*b*; region *D''* is omitted for economy of presentation.

By the goal-gradient hypothesis, the magnitude of an avoidant force increases steeply as the person approaches a region of avoidance. In consequence, the force *away* from region *D* should be greater in situation *n Y-C* (Fig. 25.2*b*) than the force toward region *D* in situation *y N* (Fig. 25.2*a*).

Lewin (11) presents evidence that where the person is in an "equilibrium" situation, i.e., an impassable barrier, there will be a rise in tension level. The amount of this rise is hypothesized to be directly related to the magnitude of the force acting on the person to locomote against the barrier. It follows that, if an individual rejects a group decision which conflicts with his own decision, there will be a greater rise in tension where the individual has voted "no" (situation *n Y-C*) than where the individual has voted "yes" (situation *y N*). Such a rise in tension would account for the relatively high level of recall in situation *n Y-C*.

Attitudes toward Disagreement between Individual and Group Decisions

After the recall phase of the experiment, open-ended questionnaires were administered to determine whether different subjects had perceived

the experimental situation in similar ways. Considerable uniformity appeared among responses to questions dealing with such matters as feelings of success or failure, views about the reasons for interruption of tasks, and desire to do well on the test. A variety of responses were given, however, to the questions, "In general, how did you feel when you voted 'no' and the group voted 'yes'?" and "In general, how did you feel when you voted 'yes' and the group voted 'no'?"

Some indicated that they consistently accepted or rejected group decisions different from their own. Others responded differentially according to whether the contrary group decision was "no" or "yes." Thus some individuals, who tended to stress the value of being cautious, indicated that they resolved disagreements between their own and the group's votes by adopting a "no" position. Individuals who stressed the value of being venturesome resolved disagreements by adopting a "yes" position. The result was that some individuals whose votes differed from the group's accepted group votes of "no" and rejected group votes of "yes," while some accepted group votes of "yes" and rejected group votes of "no."

The attitudes expressed toward group decisions which differed from their own were coded under four categories:

1. *Accept group decision.* Subject explicitly adopts the contrary group decision, disavowing his own, e.g., "The group knew best; I reconsidered and thought I was wrong; I guess I really wanted to do it anyway."

2. *Acquiesce in group decision.* Subject does not explicitly adopt the group decision, but explicitly states his willingness to comply with the group action, e.g., "I tried my best even though my vote was different; it was O.K. with me if that's the way they wanted it."

3. *Reject group decision.* Subject does not state his willingness to comply with the group decision, and discusses (*a*) his having disagreed with the group, or (*b*) his continuing to disagree with the group.

4. *Fear group decision.* Subject indicates "anxiety" about complying with the group decision, e.g., "I felt I was a liability to the group; I didn't know how to contribute to the puzzle, and felt I had to try especially hard."

We assume that persons who *accept* a group decision which differs from their own change the valence, whether positive or negative, which they have originally attributed to completing the task. Persons who *acquiesce, reject,* or *fear* the contrary group decision are assumed to maintain the original valence of the task. Let us examine in more detail how each of these attitudes may be expected to influence tension systems in each type of experimental situation.

Situation y N. The member votes "yes," the group votes "no," and the work is halted. Thus, it follows:

1. If the person *accepts* the group decision, he develops a tension system for avoidance. The outcome—quitting work on the puzzle—reduces this tension system.

2. If the person *acquiesces* in the group decision, he maintains his original tension system for completion. Quitting work constitutes an impassable barrier to this goal, and this equilibrium condition should produce some rise in tension level.

3. If the person *rejects* the group decision his original tension system is maintained. This system is initially stronger than in the case of acquiescence. Like acquiescent persons, the rejective individual is in a condition of equilibrium, but since task-completion has a greater positive valence for the rejective person, the positive driving force acting upon him against the impassable barrier is greater. Rejection should, therefore, produce a greater rise in tension than acquiescence. Both because of the greater original tension level and the greater expected rise in tension, persons who reject the group decision should have stronger tension systems than those who acquiesce.[3]

Transforming level of tension into percentage of tasks recalled, we obtain:

Hypothesis 4. % recall *y N* accept < % recall *y N* acquiesce < % recall *y N* reject.

The data of Table 25.4 confirm the predicted rank order. The mean percentages of tasks recalled are .292 for acceptant individuals, .424 for acquiescent individuals, and .574 for rejective individuals. Independently of the predicted rank order, the null hypothesis applied to these means, tested by an analysis of variance weighted for unequal size of groups, can be rejected at the .05 level of confidence.

Situation n Y-C. The person votes "no," the group votes "yes," and the task is completed. Thus, it follows:

1. If the person *accepts* the group decision, he develops a tension system coordinated to the group's completing the task. The outcome, completing the task, reduces this tension system.

2. If the person *acquiesces* in the group decision, he maintains his original tension system for avoidance. Completion by the group introduces an impassable barrier which blocks avoidant locomotion. A rise in level of tension should follow.

3. If the person *rejects* the group decision, the initial avoidance tension is assumed to be greater than in acquiescence. Again action by the group introduces an impassable barrier. The rise in tension should be greater here than in acquiescence, since the negative driving force away from completion is assumed to be greater.

[3] The attitude of *fear* cannot occur in situation *y N*, since where the group halts work the person is not required to do anything with respect to which he feels inadequate.

4. If the person *fears* the group decision, the avoidance tension is assumed to be greatest. The negative driving force against the impassable barrier is likewise assumed to be greatest. Accordingly, the level of tension should be at a maximum.

TABLE 25.4

MEAN PER CENT RECALL OF TASKS IN THREE DIFFERENT SITUATIONS OF DISAGREEMENT FOR FOUR ATTITUDES TOWARD DISAGREEMENT

Situation		Attitude Toward Group Vote *			
		Accept	Acquiesce	Reject	Fearful
y N	Mean % recall for individuals	.292	.424	.574	
	Number of individuals	6	36	25	
n Y-C	Mean % recall	.167	.597	.660	.900
	Number of individuals †	10	32	12	5
n Y-I	Mean % recall	.467	.577	.667	.500
	Number of individuals	10	25	11	8

* Note that an individual's attitude toward a group vote of *N* may be independent of his attitude toward a group vote of *Y*, and conversely. A person, for example, may accept group *N* votes and reject group *Y* votes (see text)

† The corresponding scores for *n Y-C* and *n Y-I* are each based on the same class of subjects, namely, those with the specified attitudes toward group *Y* votes Frequently, however, individuals were exposed to one or more *n Y-C* tasks and not to *n Y-I* tasks, and vice versa—hence the different frequencies of individuals in the same attitude column.

Measuring tension level by recall, we have:

Hypothesis 5. % recall *n Y-C* accept < % recall *n Y-C* acquiesce < % recall *n Y-C* reject < % recall *n Y-C* fear.

The predicted rank order is confirmed in Table 25.4, the mean percentages of recall corresponding to the terms of Hypothesis 5 being .167, .597, .661, .900, respectively. The differences among these means are significant at a high level of confidence ($P < .01$).

Situation n Y-I. The person votes "no," the group votes "yes," and the task is interrupted. Thus, it follows:

1. If the person *accepts* the group decision, he develops a tension system coordinated to the group's completing the task. Since the task is interrupted, this tension system remains unreduced. However, the tension level for these acceptant individuals is assumed to be relatively low.

2. If the person *acquiesces* in the group decision, he maintains his original tension system for avoiding work, which is at a higher level than

the tension associated with acceptance. Moreover, the group action prior to the interruption transports the person closer to the region of negative valence, and the person is blocked from quitting the task, since he has been told that work will be resumed. Again, this condition of equilibrium should produce a rise in level of tension.

3. If the person *rejects* the group decision, the level of tension should be greater than in acquiescence (for the same reasons given in the discussion of *n Y-C* reject).

4. If the person *fears* the group decision, the level of tension should be greatest (for the same reasons given for *n Y-C* fear).

From these considerations we may propose:

Hypothesis 6. % recall *n Y-I* accept $<$ % recall *n Y-I* acquiesce $<$ % recall *n Y-I* reject $<$ % recall *n Y-I* fear.

The rank order of the first three terms in Hypothesis 6 is predicted correctly (Table 25.4). However, the level of recall for *n Y-I* fear is lower than predicted. A possible explanation for this discrepancy may be suggested in terms of the partial reduction of avoidance tensions corresponding to feelings of relief in fearful persons that appear to occur when completion of the task is postponed.

Frequency of Individual and Group Disagreement

Up to this point, we have examined a number of the ways by which motivational processes in the individual can be affected by group goal-setting and locomotion. The focus of treatment throughout has been in terms of goals or avoidances which members hold in relation to the group's completing or not completing a task.

In addition, it seems likely that group members would have another goal in this situation, namely, voting in such a way that they would be generally in agreement with their fellow members. The studies by Festinger, *et al.,* (4) indicate that groups induce pressures on members to conform to standards and ways of behaving which are relevant to group functioning, and that deviants from these standards tend to be rejected by the group. Sherif's (20) work suggests that, particularly where the grounds for individual judgment are vague or ambiguous, individuals will want their judgments to be reinforced by "social reality."

The judgments which members were obliged to make in this situation were both relevant to the group's functioning and based on relatively vague criteria. We would therefore expect that concurrently with goals related to the task, members would want their own decisions to be in more or less general agreement with the group decisions. Members could tell on the basis of the announced group vote whether or not they were agreeing with the group. If the member found himself agreeing often

enough, i.e., if the goal of being in agreement were reached, tension systems coordinated to this goal should be reduced. With "agreement" tensions reduced, one would expect no effects of these tension systems on "task" tensions. If the member finds himself in frequent disagreement with the group, however, the tension system corresponding to a desire for agreement should not be reduced. How does this affect tension systems for the group task?

Each subject voted 15 separate times, and found in the course of the experiment that group votes differed from his own votes with greater or lesser frequency. Subjects were exposed to the announcement of five group "no" votes and 10 group "yes" votes. One would expect that persons who more frequently voted "no" would more frequently find themselves in opposition to the group. Paradoxically, however, a large number of disagreements with the group vote could arise because of the person's desire to agree with the group. If, for example, the announced group vote was "no" on a given puzzle, and the subject then voted "no" on the next puzzle, anticipating that the group would repeat its vote, the subject's own vote would necessarily be in disagreement, since the subsequent announcement was always "yes." We were, in fact, able to find no clear-cut relationship between a person's tendency to vote "yes" or "no" and the frequency with which group votes differed from his own votes. We can conclude that in general subjects had little control over the frequency of their disagreements.

As the number of their disagreements with the group became greater, however, several subjects could be observed to be losing their interest in the group tasks. They appeared, instead, to become concerned with whether the group votes were turning out the same as their own. After casting their votes, they would appear to await the announcement of the group vote with great expectancy. If the group vote agreed with their own, they would give evidences of feelings of satisfaction; if it turned out differently, they would show disappointment. In the postexperimental questionnaire, subjects who felt the group vote had differed from their own too frequently expressed a variety of doubts and misgivings about themselves, asking such questions as—"What's wrong with me? Am I a bad group member? Am I too different from the others?"

Most subjects found the announced group vote differed from their own votes from five to eight times over the 15 tasks. In examining the recall of tasks in relation to the number of such disagreements, it was noticed that with very frequent disagreements (*a*) recall appeared to diminish in certain cases where theoretically we would expect the presence of unreduced tension systems; (*b*) recall appeared to increase for tasks on which his own and group vote were in agreement. Such results seemed to have a prima-facie reasonableness in terms of the

qualitative observations reported above. For, if frequent disagreements with the group vote created a situation where members lost their task-orientation, then there should be no arousal of tension systems for the tasks. If the member in this situation now desired to be in agreement with the group, agreements would be experienced as rewards, and it might be expected that rewarded tasks will tend to be better remembered (3).

In order to determine whether effects of this sort were present in the data, tasks were grouped in Table 25.5 according to whether they had

TABLE 25.5

COMPARISON OF PERCENTAGES OF RECALL OF AGREEMENTS VERSUS DISAGREEMENTS IN TREATMENTS *Y-C*, *Y-I*, AND *N*, BASED ON POOLED DATA FOR GROUPS OF INDIVIDUALS WITH DIFFERENT NUMBERS OF TOTAL DISAGREEMENTS

Comparison	Total Number of Disagreements			
	5	6	7	8
(%*n* *Y-C*)–(%*y* *Y-C*) Difference (%)	(44.7–38.0) +6.7	(57.2–37.5) +19.7	(67.0–48.9) +18.1	(44.4–55.9) −11.5
(%*n* *Y-I*)–(%*y* *Y-I*) Difference (%)	(57.9–56.2) +1.7	(60.0–55.8) +4.2	(59.3–52.0) +7.3	(41.6–57.2) −15.6
(%*y* *N*)–(%*n* *N*) Difference (%)	(44.6–46.8) −2.2	(49.0–46.6) +2.4	(44.5–36.4) +8.1	(55.0–66.7) −13.7
(% Total Disagr.)– (% Total Agr.) Total Difference (%)	(49.1–47.0) +2.1	(55.4–46.6) +8.8	(56.9–45.8) +11.1	(46.3–59.9) −13.6

been worked on by individuals whose own votes had differed from the group vote five, six, seven, or eight times. For each of the three group treatments comparisons were then made of the percentages of tasks recalled where the individual's vote on the task had been the same as the group's and where the individual's vote had been different. The scores presented in Table 25.5 are the differences between these percentages. Friedman's (6) test is applied to these data because of heterogeneity of variance and indicates that frequency of disagreements significantly affects type of recall ($P < .02$). Where subjects differ from the group five, six, or seven times, disagreements are either about equally recalled or somewhat more frequently recalled than agreements. But where subjects differ on eight occasions, i.e., on over half the total votes cast, a sharp reversal occurs and the recall of agreements exceeds that of disagreements.

It seems plausible to interpret this phenomenon as reflecting a loss of task-orientation by subjects and the replacement of this with a new goal, namely, the goal of finding themselves in the condition of being

in agreement with the group. However, to say that this goal of being in agreement with the group will lead subjects to recall agreements raises a difficult problem in terms of tension system theory. Agreement for these subjects represents the attainment of their goal; disagreement represents non-attainment. We would then have to say that subjects with the goal of being in agreement recall more finished tasks (i.e., agreements) than unfinished ones (i.e., disagreements).

A brief statement may be in order about a possible way of resolving this paradox. Within Lewinian theory tension systems may result in a person's attempting to locomote toward a goal, or, if the medium is fluid or more "irreal," some form of restructuring of the situation may occur. On the level of action, interruption of the task leaves the person with tendencies to resume locomotion (18). The Zeigarnik effect, according to Lewin (12), is based on the fact that where thinking is related to action, the person tends to continue to think about the task which is to be resumed, and that this will be reflected in increased recall. However, thinking about unfinished tasks is not functionally related to tension-reduction if the person feels unable to act, but feels obliged to *wish* for a satisfactory outcome. For it is likely that persons operating on a wish-level will obtain a greater measure of tension-reduction by thinking about successes (finished tasks) rather than failures (unfinished tasks). This should manifest itself in tendencies to recall finished tasks by persons who feel unable actively to locomote to their goals—which is a possible interpretation of findings such as those of Rosenzweig's (19) with handicapped children.

In the present experiment, among those subjects who experienced frequent disagreements with the group, one would expect to find some, at least, who would be doubtful that action on their part could bring them into agreement. If, with frequent disagreements, they become discouraged about their ability to predict the group vote, they can only cast their votes and wait passively, *wishing* that the group vote will turn out the same as their own. The hypothesis that persons who are behaving on a wish-level will tend to recall finished tasks, will then account for the finding that these subjects recall more agreements than disagreements.

To test this interpretation of the results, one could design an experiment in which the only goal of the member is to vote in such a way that he will be in agreement with group vote. Recall of agreements and disagreements could then be compared in situations where the individual believes he can actively locomote toward this goal and where he believes he is unable actively to locomote. Theoretically, recall of agreements should exceed recall of disagreements in the latter case; disagreements should exceed agreements in the former case.[4]

[4] This experiment has since been performed with positive results (8).

Summary

A method for conceptually treating the relations between individual and group goal-striving has been presented, and a technique for measuring individual motivation in relation to group goals has been described.

The conceptual treatment—within the framework of Lewin's topological and vector constructs—is designed to handle the fact that individuals may find themselves psychologically "carried" toward or away from goals, or toward or away from avoidances by the action of a group. The effects of the group action are represented in the individual's life space as locomotions by the person into or through state regions. Goals or avoidances which the individual holds for the *group* are represented as state regions with positive or negative valences, respectively.

The measurement technique employed is an adaptation of Zeigarnik's method of recall of interrupted tasks to the group situation. An experiment was designed in which a number of individuals worked together on a series of group tasks. Votes were taken on whether or not the individual desired the group to complete each task, and after these votes work on the tasks was either halted, partly completed, or fully completed. The major findings may be indicated as follows:

1. Tension systems can be aroused for goals which the individual holds for the group. If the individual accepts the group goal, tension is reduced where the group completes the task; tension is not reduced where the group activity is interrupted. Just as with tension systems for goals which the person holds for himself, these can be measured by the relative recall of finished versus unfinished group tasks.

2. Tension systems can be aroused for avoidances which the individual holds for the group. Avoidance tensions will be reduced if the possibility of the individual's being "carried" into the region of avoidance is removed; they will be unreduced if this possibility persists. It was shown that recall of tasks can be used to measure avoidance tensions as well as goal tensions.

3. A member's attitude toward disagreement between his own and group decisions will have systematic effects on the arousal and reduction of tension systems. The same person's attitudes toward group decisions which differ from his own may vary according to whether the group decision is to complete a task or to abandon it. Four attitudes affecting tension systems were distinguished, "acceptance," "acquiescence," "rejection," and "fearfulness," the latter arising only in cases where the group decision is to complete a task.

Where an individual votes "yes" (to complete a task), the consequence of a contrary group vote is that a barrier is interposed along the individual's path to the goal (frustration). Where the individual votes "no" (to

avoid a task), the consequence of disagreeing with the group is that the person will be "carried" by the group toward the avoidance (coercion). The theoretical derivations that individuals will develop higher levels of tension in situations of coercion than in situations of frustration were confirmed.

4. Evidence was found for the interpretation that tension systems to be in agreement with other members exist concurrently with tension systems for the group task, and that frequent deviations from the group vote will leave tension for agreement unreduced. This *agreement* tension system tends to supplant *task* tension systems in deviant members.

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21

The Effects of Varied Clarity of Group Goal and Group Path upon the Individual and his Relation to his Group

Bertram H. Raven and Jan Rietsema

Many psychological theories begin with a consideration of the individual in relation to some goal, the drive that makes that goal attractive for him, and the path he must follow in order to attain it. It is therefore surprising that there has not been more systematic investigation of what happens when the goal is unclear for the individual or when the path is unstructured. Lewin (8, 255) pointed out the importance of clarity of the goal and the path for the security of the individual. When he is placed in "unstructured surroundings," the person is uncertain and threatened since he cannot be sure that a given action will lead him toward a desired goal. He does not know whether the "neighboring regions are dangerous or friendly."

Lewin, Lippitt, and White (10) incorporate "clarity of goal and path" into their operational distinctions between democratic and autocratic leaders. The democratic leader was instructed to give his followers a general perspective of the entire task during a preliminary discussion period. The general steps toward the goal were outlined and alternative procedures suggested. The autocratic leader dictated the steps to his followers one at a time, so that future steps toward the goal were to a large degree uncertain. Though the democratic groups proved more productive and better adjusted to the situation, it would not be possible to assess the extent to which this was due to the manipulation of clarity rather than to the many other differences between the leaders.

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Cohen (4) presents one of the few studies that centers specifically on this problem. The subjects in his experiment were telephone operators who were being evaluated by a supervisor. The goal of the subject was thus clear—to get a good evaluation. However, the paths toward that goal were not always clear. In some conditions, each problem presented was difficult and did not suggest a clear solution. In other conditions, the solutions were relatively unambiguous. For some subjects, the supervisor would offer a single clue that would help her throughout the test session; for other subjects the clues were altered several times, without any apparent consistency. By varying consistency and ambiguity, Cohen created differing degrees of clarity of path for the individual in pursuit of his goal. He found that subjects whose cues were inconsistent and solutions ambiguous had greater difficulty adjusting to the situation than did those subjects who had a clear path toward their goal. The "unclear" subjects were less secure, had lower self-evaluations, were less motivated, and worked less efficiently.[1]

When an individual is in an interactive relationship with others, he may be affected by the goals of this group. In such case, the investigator cannot get a clear conception of his life space without an understanding of the group space. Just as the individual's goals and the paths toward these goals may be unclear, the group space may be similarly unstructured. The members of the group may not know toward which goal they are working, nor the proper procedure for reaching these goals. The unclarity of the group situation is then reflected in the life space of the individual. However, consistent with a psychological approach, it is not the "objective group" situation that is important, but the group space *as it exists for the individual.* Thus the group situation may be unclear for the individual member because the group itself is unclear as to its goals and paths; it may also be unclear for him because he is not aware of what the goals of the group are, nor of the paths toward this goal, even if these may be clear to the other group members.

Regardless of whether the group itself is unclear as to its goals or paths, or whether there has been a failure to communicate the paths and goals to the individual, we should expect this lack of structure to affect the individual's adjustment to the situation in much the same way as unclarity with respect to purely individual goals and paths. In addition, we expect that a lack of structure in the group situation would have implications for the relationship of the individual to his group.

[1] In his interpretation, Cohen placed particular stress on the fact that the supervisor had considerable power to punish or reward the subject. He attributed the insecurity and unfavorable adjustment of "unclear" subjects largely to this power situation. We should place greater emphasis on the unclarity itself and consider power as an accentuating rather than a necessary condition.

The first type of group clarity was manipulated by Gerard in a study as yet unpublished. In the clear group condition, the subjects working in the group were told the performance of other groups, this providing a goal for their own performance. They were also told that they would work for fifteen minutes, which would make the group path more structured. The subjects in the unclear group situation were given neither of these items of information. The effects of these experimental variations were obscured somewhat by the introduction of manipulations of role clarity and status. Gerard found some evidence to the effect that high-status subjects in groups with unclear goals were more likely to try to define goals for their group. In contrast, low-status subjects whose group goals were unclear tended instead to withdraw from their group, to become dissatisfied with their roles, and to devaluate their own effectiveness. With regard to their individual adjustment, the results for low-status subjects tend to parallel those that Cohen found for low-status subjects in his study (4).

The situation often encountered in the modern factory would serve as a good illustration of the second type of unclear group situation. The individual may feel that the larger organization of which he is a member does have a clear goal, namely the product of the factory, and also that there may be a clear path toward that goal. However, he himself often has no clear picture either of the goal or of the path. Though he knows what he must do for a relatively short time period, he is not clear about how this fits into the overall plan. The unstructuredness of the group situation has implications both for his individual adjustment and for his relationship with his group. As an individual, his working toward a clear goal increases interest in his work; a lack of structure in the situation makes his work less attractive, more threatening, and increases hostility. As a group member, a clear group goal and group path give meaning to his group membership, increase his attraction to his fellow-workers, make him more group-oriented, increase the power of the group over him.

We will attempt to study these and other effects of varied clarity of the group situation in the experiment that follows. We have taken care that all subjects see the group as having a clear goal and a clear path toward that goal. However, the subjects' own understanding of these goals and paths will be varied experimentally.

The Experiment [2]

The subjects who took part in the experiment were all University of Nijmegen male students in their early years of undergraduate study.

[2] The experiment was conducted entirely in Dutch.

They were recruited either by phone or personal visit and had very little knowledge of the experiment prior to participation, except that the group session would last only two hours.

The data that follow are taken from 78 subjects, 39 in each of the two experimental conditions. Though four subjects took part in each session, care was taken that no subject knew the identity of the other three with whom he was working. A subject's-eye view of the situation will perhaps best present the experimental procedure:

On the subject's work table there is a small loudspeaker, a pair of scissors, and a stack of cards. On each card is printed identically six geometric figures, numbered and labeled for identification: 1. equilateral triangle, 2. right-angled triangle, 3. square, 4. diamond, 5. trapezoid, 6. rectangle. The only other person in the room is the observer, who also gives instructions:

". . . your task will be cutting out figures. We want to know how fast and how accurately you cut while listening to voices and sounds coming through this loudspeaker . . . A messenger will come in regularly to collect the cut-out pieces and record the number . . . in order to make this more interesting, we decided to offer a pocketbook or a box of cigarettes as a prize to the cutters who cut out the greatest *number of series*. A *series* consists of a set of all six geometric figures shown on each card. You may cut as you wish but you must cut complete series to qualify for the prize.

"In another room, there are three other subjects who will use the pieces you cut. From these cut-out pieces they will build certain things. These are the voices which you will hear coming over on this loudspeaker. The messenger will deliver the cut-out pieces to them. They can speak to you over this loudspeaker, but you cannot speak to them nor to the messenger."

The amplifier system is switched on and the experimenter in the builders' room can be heard giving the three builders their last instructions, which fit in with what the cutter has already been told. For purposes of the study, the builders are arbitrarily given the names, Jan, Piet, and Henk, which they use in addressing one another for the remainder of the experiment. It becomes evident to the cutter that the builders are pasting pieces together with cellulose tape and then painting them. The cutter can hear them working and talking together.

When four minutes of working-time have elapsed, the builders and the cutter are interrupted for a few questions. The assistant with the cutter asks him a question; the builders are told to write out their answers on paper. Meanwhile, the messenger comes in and picks up the pieces the cutter has already cut.

The subject now hears the messenger deliver the pieces to the builders in the other room. They examine the pieces and then say: "Cutter, would you please concentrate only on squares and trapezoids. We need only these for our work now."

The cutter is in some conflict. If he follows their instructions he will be falling behind in his efforts to win a prize. Furthermore, he was not instructed by the experimenter to conform to the requests of the builders. He looks at the experimental assistant inquisitively and gets a non-committal shrug.

After four minutes, there is another interruption for questions. Again the messenger collects the pieces. When the builders receive them, they again ask for more squares and trapezoids.

There is a total of twenty-eight minutes of working-time—seven four-minute periods separated by breaks of approximately one minute. The first period is a pre-induction period—since the cutter cuts without instructions from the builders. The six remaining periods we refer to as induction periods: two of these periods follow a request to cut only squares and trapezoids, two follow requests for trapezoids and equilateral triangles, two follow requests for equilateral triangles and squares. If the subject conforms completely, he will have cut only three of the six figures in the series throughout the six induction periods.

After the sixth induction period, there is an especially long interruption, during which a lengthy questionnaire is administered. The experiment is then declared completed and a full explanation is given to the subject.

He first learns that, though there were indeed four subjects present, all of them were cutters, each in a separate room with an experimental assistant. The builders whose voices were heard over the loudspeaker existed only on tape-recording. Before leaving, each subject is given a prize.

Constant Conditions

Two tape-recorded scripts were used, which were identical except for the independent variable—clarity of group goal and group path. The tape-recording technique[3] allowed for a very high degree of constancy. The personalities of the builders remained the same for every subject. The words they used, with the exception of the independent variables, were precisely the same. Their requests were made in pretty much the same tone of voice. The timing was also kept constant. As far as the individual subject was concerned, the size of the group remained at exactly four, even if as many as three of the subjects failed to keep their appointment.

The influence attempts were introduced in both scripts to allow for tests of hypotheses regarding group influence in clear and unclear situations; subjects are very likely to accept inductions, particularly if they feel that the experimenter expects them to do so. The individual prize was therefore introduced in both conditions to create a force in the opposite direction and to make the expectations of the experimenter less clear, thus allowing for the differences in conditions to manifest themselves.

Manipulation of Independent Variable

The initial instructions of the observer-assistant were the same for all subjects. In the tape-recordings, the difference in experimental variations was created: in the *clear condition*, the subject was made aware of the group goal—building houses—the procedure by which these were built, as well as the individual cutter's relation to this procedure. In the

[3] The suggestion for this technique came from an article by Blake and Brehm (3).

unclear condition, both the group path and the group goal were left unclear. These differences were introduced by the voice of the experimenter, rather than by a decision of the builders. The structure of the two scripts remained parallel, and each reference to a "house" in the clear script was balanced by a very vague reference to the product in the unclear script. At times, the unclear product was referred to as something flat (it could be pasted in a scrap-book), at other times it was solid or hollow.

To vary clarity of path, in the clear condition, the experimenter was heard to tell the builders the method by which the houses should be built —first floors, then walls, then roofs. The subject then had a clear picture of the specific regions in the group space as well as the exact ordering of these regions. He also had an idea about the length of the path—a time perspective. In answer to a question, the experimenter told the builders that the messenger would enter exactly ten times. (He actually entered seven times.) In the unclear condition, the experimenter suggested procedures, but in a manner too vague to be understood by the subject. Note that in each case, differences in clarity were introduced by the experimenter. The subjects could therefore not attribute differences in clarity to lack of intelligence on the part of the builders.

In summary, the subjects in the clear condition had a clear conception of the group goal, the regions in the path toward the goal, the ordering of the regions, and the length of the path. For the subjects in the unclear condition, the goal and paths remained relatively unstructured. In every other respect, the conditions faced by the subject were remarkably similar.[4]

Measurements

Three basic types of measurement were used—production, interview data, and observation data. First, the messenger, making his rounds at the end of each four minutes of working-time, would pick up the pieces cut by the subject and record them, keeping count of which geometric figures were cut. We could then calculate the percentage of the pieces cut that was requested by the builders. Secondly, the observer-assistant asked the subject one or two questions between work periods, and these interview data were coupled with answers to the extended questionnaire given at the end of the work session. Thirdly, immediately following the influence attempts from the builders, the observer-assistant would watch the subject's reactions to the inductions. He would observe not only which

[4] A condition of intermediate clarity—clear goal, unclear path—was prepared but never carried out because of limitations in time and number of available subjects.

pieces were cut but also the general attitude of the subject. During each work period, the builders experienced some sort of sympathy-provoking situation. The observer, knowing the script, was prepared to rate the subjects' reactions to these. In addition, at the end of each period, the subject was rated on degree of task-involvement, general hostility, and general tension. All these ratings were on a seven-point scale. Unfortunately, insufficient time was allotted to training of the observers, and the observer data, with the exception of one of the sympathy ratings, showed differences that were not significant, though they tended in the predicted direction.

Effectiveness of Manipulations

To check on the effectiveness of the manipulation of the independent variables, we asked in the final questionnaire, "To what extent is it clear to you what your group is building?" and "To what extent is their plan clear to you?" The comparison of the distribution of responses along a seven-point scale of clarity showed that these distributions were stochastically different at the .001 level, by a Marshall's test (11). Evidently the group goal and group path were more structured in the clear condition. However, we also wished to make certain that this difference in clarity was not attributed to the builders. We therefore also asked, "To what extent did the others have a careful plan according to which they worked?" and "To what extent were the others clear about what they were making?" To the first question, the distributions of clear and unclear subjects were practically identical. Builders in the clear condition were seen as being somewhat more clear as to their product, but the difference was not great ($p = .20$).

Theory and Results

Our measures indicate that we were successful in creating a situation which we wished to study. Each of our subjects existed in an interactive relationship with a group of three builders, in the sense that his behavior could determine whether or not the builders reached their goal. Most subjects felt that their group had a clear goal and that the builders knew how to reach it. While subjects in the clear condition were aware of exactly what that goal was and how it would be reached, "unclear" subjects did not know what their group was building nor how they were going about it.

This difference between conditions can perhaps best be expressed in a Lewinian topological representation, comparing both individual and group

spaces for both experimental conditions: in the clear condition, the group would first be located in a region of "making floors." At a distance of ten regions removed would be a clearly defined goal region, positively valent—"completing houses." The nine clearly defined regions between would represent a path, differentiated by the visits from the messenger. Overlapping these regions would be three other well-defined regions—"making floors," "making walls," "making roofs and ceilings." The unclear group space would show the group in an undefined region, this connected by another unstructured region to several vaguely defined regions—"making solids," "making flat objects," "making hollow objects."

A similar comparison would be made for the individual's life space: In the clear condition, we would first see the individual in a region of "making a decision." At a distance of nine regions, in one direction would be a clearly defined goal region—"contributing to group's completing houses." Overlapping the nine regions along the clear path toward that goal would be three regions—"cutting squares and trapezoids for floor," "cutting parts for walls," "cutting parts for roof." In the opposite direction would be a region of "cutting series," subdivided into nine subregions, and a goal region—"winning cigarettes or pocketbook." In the unclear condition, we should also find the subject in a region "decision-making," and an adjacent region—"cutting squares and trapezoids." However, adjoining that region would be an unstructured area, leading to a vaguely defined region—"contributing toward the group's completing some vaguely defined figures." In the opposite direction would be an undifferentiated region—"cutting series," connected with a goal region—"winning cigarettes or pocketbook."

In this section we shall state our hypotheses regarding the effects of the difference in clarity, and present with it the related data that we obtained from our experiment.

We shall use the term "clarity of the group situation" to refer to the degree to which the goal of the group is clear for the individual and the degree to which the path toward the goal is structured. Also our hypotheses are meant to hold for an individual who exists in an interdependent relationship with a group, of such a kind that his behavior can affect the others in pursuit of their goals and the group can affect the extent to which he reaches his goals. Group membership has been defined in terms of such interdependence (5). Thus, all of our hypotheses should be preceded by the statement:

Given an individual who exists in an interdependent relationship with a goal-directed group:

Hypothesis 1. The greater the clarity of the group situation, the more will the individual be attracted to the group-goal-related task.

As Lewin (9, 106) points out, "whether or not an activity is disgraceful or unpleasant depends to a high degree on its psychological meaning, that is, on the larger unit of events of which this action forms a part . . . If the objective is worthy, indeed, the effort is not even felt to be a sacrifice." However, uncertainty as to where a given activity will lead results

in uncertainty of behavior. An unstructured situation tends by its very nature to be less pleasant.

This hypothesis was tested by comparison of responses to several questions, administered at the end of the experiment. One asks, "How did you like the task which we gave you and the others to do (building and cutting)?" A second asks, "How much did you like the task which you personally had to do (cutting out figures)?" As can be seen in Table 1, the differences are significant at the .02 and .04 points,[5] respectively, with the subjects in the clear condition showing much more attraction to their task. A question that asked, "Suppose that you had earlier known as much about this experiment as you know now, how great would have been your desire to take part?" The responses to this question were also in support of the hypothesis ($p = .04$, by Marshall's test).

TABLE 1

ATTRACTION TO TASK

(a) "How much did you like the task which we gave you and the others to do (cutting and building)?"
(b) "How did you like the task which you personally had to do (cutting out figures)?"

	Liked Very Much	Liked It	Liked It a Little	Indifferent	Disliked It a Little	Disliked It	Disliked It Very Much	Total
(a) Clear	1	15	11	2	4	2	4	39
Unclear	1	6	9	4	15	4	0	39
				$p = .02$				
(b) Clear	0	6	16	4	6	3	4	39
Unclear	0	4	9	6	9	10	1	39
				$p = .04$				

Hypothesis 2. The greater the clarity of the group situation, the less non-task-directed tension will be experienced by the individual.

The reasoning here was similar to that of Cohen (4). The individual, not being certain that his activity is leading to a desirable goal, shows this uncertainty, and the threat that arises from such uncertainty. The tension he has mobilized cannot be directed toward those goals with any degree of confidence and is therefore expended in other ways. As a result, the person feels ill at ease, and shows this in his behavior.

[5] Unless otherwise stated, significance figures are by Marshall's test (11). Marshall's test is a non-parametric test of stochastic differences. Also all results will be stated for a one-tail test, since they are testing directional predictions. For a comparison of results in this report with those in which a two-tail test is used, all probability values reported here should be doubled.

Two questions in the final questionnaire were also phrased to test this hypothesis. One asked "To what extent did you feel at ease while working?" with a seven-point scale from 1. "fully at ease" to 7. "completely ill at ease." No subjects would admit being at all ill at ease, so that the range extended over only the first four categories. The means, of 1.9 for the clear condition and 2.2 for the unclear condition, are not significant, though in the predicted direction. Another question, which was less direct, asked "To what extent do you think that, because of being physically separated, other cutters might not be well at ease?" This was also in the predicted direction, and here the differences were greater. Thirteen of the 39 subjects in the clear condition felt that the physical separation would not affect emotional feelings, whereas only six subjects in the unclear condition accepted this statement. However, the over-all significance level was only .10, by Marshall's test. Our data with respect to this hypothesis can only be regarded as suggestive.

Hypothesis 3. The greater the clarity of the group situation, the less hostile feelings will be experienced by the individual.

If the unclear situation tends to make the person ill at ease and threatened, and since he cannot leave, we should expect a degree of frustration to result, leading, by the frustration-aggression hypothesis, to residual hostility. This hypothesis follows from the preceding one, and it is therefore interesting that it is somewhat better supported by the data.

TABLE 2

GENERAL HOSTILITY

"Suppose that you had gotten up on the wrong foot this morning, and that you had come here in a bad mood. How would this experimental situation have influenced your humor?"

	MAKE VERY ANGRY	MAKE MUCH WORSE	MAKE WORSE	MAKE SLIGHTLY WORSE	HAVE NO EFFECT	MAKE SOMEWHAT BETTER	DEFINITELY IMPROVE
Clear	0	3	3	5	12	13	3
Unclear	0	2	7	12	9	8	1
			$p = .02$				

Subjects will not generally admit to hostility. Thus we utilized two indirect questions to test this hypothesis. The first asked, "Suppose that you had gotten up on the wrong foot[6] this morning, and that you had come here in a bad mood. How would this experimental situation have influenced your humor?" We note in Table 2 that subjects in the clear

[6] Dutch equivalent of getting up "on the wrong side of bed."

condition were significantly more likely to feel that the experiment would improve their humor, while the subjects in the unclear condition tended to feel that this study would have made them feel worse.

In response to another question ("To what extent do you expect that other people, who do the same work as you did, might get just a little angry?"), seventeen subjects in the unclear condition felt that some people, or even quite a few people, might get angry. Only six people in the clear condition predicted this degree of hostility. However, the overall distributions showed differences that are not significant.

Hypothesis 4. The greater the clarity of the group situation, the higher will be the individual's self-evaluation.

An individual in a clear situation, knowing precisely how his work is contributing to a clear goal, can see his accomplishment and feels more secure. Therefore, we expected that he would evaluate his own work more favorably. However, this hypothesis does not seem well supported. Three questions, "How do you feel that you have been working until now?" "How do you think that the others will rate your work?" and "How do you think that your work will compare with that of others who have done exactly the same job?" yielded only slight differences between conditions, though each was in the predicted direction.

Hypothesis 5. The greater the clarity of the group situation, the greater the group-belongingness of the individual.

Included in group-belongingness as used here are (*a*) the feeling of group membership, of oneness with the group, (*b*) an involvement in the work and in the goals of the group, (*c*) a feeling of emotions in sympathy with the group.

We believe that the perception of a clear group goal and of a clear path toward that goal tends to draw the individual into the group. This holds true, provided the goal itself has some positive value, however small, for the individual. Deutsch (5), in fact, makes the individual's perception of a "promotively interdependent" or common goal his basis for a definition of group membership. And it follows that the clearer the goal and the path, the more this interdependence will become obvious to the person.

Group membership. The test for differences in group membership comes from a question from the final questionnaire, "In the factory, the person is a member of many groups. In some cases, the person feels fully a member, in other cases, he feels only a second-class or marginal member. Some feel themselves not in the least a member of the group even though they are working with the others. To what extent did you feel a member of a group with the three others?" Until this point, we had avoided referring to the builders and cutter, taken together, as a group.

We can see in Table 3 that differences between conditions are indeed

evident, though not significant over-all. This low level of significance can be attributed to the great number at the middlemost category. If we examine only those who avoided the middle category, we see the difference between conditions particularly sharply (chi square = 3.9, with 1 df, $p = .025$).

TABLE 3

PERCEPTION OF GROUP MEMBERSHIP

"To what extent did you feel a member of a group with the three others?"

	NOT IN LEAST MEMBER	SCARCELY MEMBER	SLIGHTLY	SOME, BUT LESS THAN OTHERS	ALMOST AS OTHERS	AS MUCH AS OTHERS	AS MUCH OR MORE THAN OTHERS
Clear	2	0	5	17	3	7	5
Unclear	2	6	5	18	1	4	3
			$p = .10$				

Group Involvement. By *group involvement,* as compared to *individual involvement,* we mean the concern the person shows for the performance of the group, over and above his own performance. To test the prediction that subjects in the clear condition would show greater group involvement, we asked two questions: "How would you feel if I should tell you that you are not doing your job well?" and "How would you feel if I should tell you that you and the other three are not doing your job well?" Each question was accompanied by a six-point scale, ranging from 1, "I would be very disappointed," to 6, "It would not bother me in the least." The pair of questions was asked once after the second four-minute work period, and also in the final questionnaire. Since the same scale was used in each, a simple comparison of the two would show whether there was greater individual or group involvement. In Table 4, we see that the differences between conditions during the first administration of the questions was quite clear—most of the clear subjects tending to feel worse if their group was not doing well; most of the subjects in the unclear condition feeling worse if they personally were not doing well, or expressing equal concern. Combining the two smaller categories, we find that the difference is significant at the .01 point, in a *t*-test of difference in proportions. The difference in the second administration of the questions is, to a considerable extent, obliterated. As we shall see below, there is some reason to believe that the subjects in the clear condition began to lose some of their interest in the group toward the very end of the experiment, or at least felt that they had already helped the group enough and should now concentrate on their own prize.

Sympathy. By sympathy we mean the induction of an emotion—the experience of joy when others are joyful, sadness when others are sad, laughing when others laugh, etc. An individual who identifies with a group will be more likely to sympathize with that group. Thus we expected more sympathy in the clear condition. To compare conditions on sympathy, we placed a sympathy-provoking situation in each four-minute work period. The identical situations appeared in both scripts. These included laughing at a cartoon that the subject could not see, a song, a belch, a disturbance following the spilling of paint, humorous interchanges. The observer, knowing the script, was prepared to rate the subject's reaction on a seven-point scale.

TABLE 4

GROUP INVOLVEMENT VS. INDIVIDUAL INVOLVEMENT

Comparison of responses to two questions: "How would you feel if I told you that you and the other three are not doing a good job?"

		Greater Concern for Group	Equal Concern	Greater Concern for Self
During Break	Clear	23	12	4
	Unclear	13	19	7
(t-test of difference in percentage who show greater concern for group, $p = .01$)				
Final Questionnaire	Clear	12	19	8
	Unclear *	9	21	8

* *One no answer*

Taken as a whole, there is no sharp difference in sympathy by the observers' ratings. In most cases, no response was evident and we therefore find a very great proportion of the ratings in the neutral category. The over-all differences in means for the seven periods are not significant, though in the predicted direction—3.5 and 3.7 for clear and unclear conditions respectively.

However, the ratings for one sympathy situation show dramatic differences between the two conditions. These were the ratings during the fifth work period of a belch or *boer,* followed by a loud positive response from the builders. The reaction to the *boer,* as shown in Table 5, were much more likely to be rated positively in the clear condition. The difference is significant at the .001 level.[7]

[7] There are several reasons why this particular stimulus should particularly point out differences in conditions. First, the *boer* was more obvious, and less expected, so

In general, our data point to a greater degree of group-belongingness in the clear situation, and we can consider the hypothesis as substantially supported.

TABLE 5

SYMPATHY WITH "BOER"

	STRONG POSITIVE	MODERATE POSITIVE	LIGHT POSITIVE	NO EVIDENCE	LIGHT NEGATIVE	MODERATE NEGATIVE	STRONG NEGATIVE
Clear	3	14	13	7	2	0	0
Unclear	0	2	12	19	6	0	0
			$p = .001$				

Hypothesis 6. The greater the clarity of the group situation, the more favorable will be the evaluation given by the individual to his group.

This hypothesis follows from the previous one about feeling of belongingness and also from the hypothesis about attraction to the group-related task. The attraction to the work would be carried over to the evaluation of one's co-workers. A feeling of belongingness also leads to a more positive evaluation.

To measure personal attraction, we asked, "How did you find the other subjects whom you heard working over the loudspeaker?" This question was asked after the first four minutes of work, and also at the end of the experiment. The responses for the first administration as shown in Table 6 are in the right direction, but are not significant, possibly owing to the lack of sensitivity of the question. Responses on the final questionnaire were similar. This hypothesis cannot, therefore, be regarded as supported.

Hypothesis 7. The greater the clarity of the group situation, the more will the individual be able to perceive social differentiation in the group.

Our rationale for this hypothesis stems from an assumption that the roles within a group, particularly those which have been called "functional roles" (2), gain their meaning from their relationship to the basic goals and activities of the group. When the goal and path of the group are unclear, the social structure of the group also becomes less meaningful to its members.

that a response from the subject would be more likely to occur. Also, the difference can be explained from Dutch student life. The *boer* is one aspect of the student culture—often it is heard at jovial male student parties. We can find comparable social items in most student cultures that are less acceptable in the general society, but are received in a friendly way within the student in-group. Thus, the reaction on the *boer* would seem to be a very interesting index of degree of in-group feeling. Of course, this finding should also be considered along with other data, since the fact that the observers were aware of the prediction could still possibly bias the results, despite all efforts to the contrary.

To test this hypothesis, we introduced some consistency in behavior among the three builders, which would allow the cutters to draw conclusions about their functions in the group. These distinctions were not as clear as they might be, because of subsequent alterations in the script. However, in the final questionnaire, we asked the subjects to try to pick

TABLE 6

ATTRACTION TO GROUP

"How did you find the other subjects whom you heard working over the loudspeaker?"

	VERY NICE *	NICE	O.K.	NEUTRAL	NOT TOO NICE	NOT NICE	ESPECIALLY NOT NICE
Clear	2	18	9	8	1	1	0
Unclear	1	14	13	6	5	0	0

* *Sympathiek*

out the builder who (*a*) did the most leading, (*b*) did the most following, (*c*) seemed to do most to make the group work more smoothly, (*d*) seemed to do least to make the group work smoothly. As an aid in remembering names, we asked each builder, by recording, to say a few words, including his own name, just before the cutter answered the question.

TABLE 7

SOCIAL PERCEPTIVENESS

A. Number of subjects who noted social role differentiation

	LEADER	FOLLOWER	SOCIAL SMOOTHER	SOCIAL DISRUPTER
Clear	32	28	19	14
Unclear	26	16	8	8
p *	.06	.005	.005	.07

B. Number of subjects who were able to name an individual for a given social role

	LEADER	FOLLOWER	SOCIAL SMOOTHER	SOCIAL DISRUPTER
Clear	23	24	15	11
Unclear	20	13	6	4
p *	NS	.01	.02	.03

* By one-tail *t*-test of differences in proportions Over-all significances, by combining chi squares and adding degrees of freedom, are .001 and .002 for A and B, respectively.

In Table 7 we see very sharp differences in social perceptiveness, with subjects in the clear condition being much more able to note differences in role among the builders. The differences are particularly signifi-

cant for perception of who was the "follower" and the "social smoother." This is perhaps due to the fact that the "leader" role is especially sharp and the "disrupter" role especially unsharp, so that differences between conditions are not given the opportunity to manifest themselves. The over-all significance levels combining chi squares and degrees of freedom, are very clearly in support of the hypothesis, being less than .001 for differences in ability to note social differentiation, and .002 for ability to name a person for a given social role.

Hypothesis 8. The greater the clarity of the group situation, the more will the group be able to influence the individual.

An influence attempt from the group will be more likely to be accepted if it is clearly seen as furthering the group's progress toward a clear and acceptable goal. When the goal and path are not clear, the individual has no assurance that the influence, if accepted, will not lead him in a direction contrary to his own desires. Furthermore, the feeling of belongingness to the group, which, we have shown, is greater when the group goal and path are clear, will also increase the person's tendency to accept influence from his group. Deutsch (5) has already demonstrated that a group that is "promotively interdependent"—such that the actions of each individual are seen as helping all others toward a goal—will have a greater degree of positive inducibility.

At the conclusion of the experiment, we knew for each subject the number of pieces he had cut during each four-minute work period. We also knew how many of these pieces for each period had been requested by the builders just prior to that period and could calculate from this his percentage conformity. Since two of the six geometric figures were requested, a subject who cut only series, and did not heed the request of his group, would still have cut 33⅓ per cent requested pieces. The higher the percentage above that, the greater the influence of the group.

Table 8 shows the percentage conformity over the total of the six induction periods. If we examine the distributions we find that the subjects in the clear conditions distribute themselves roughly in a J-curve of conformity, with a slight increase in cases at the lower percentage levels. The subjects in the unclear condition are ranged in more of a rectangular distribution. However, the difference is significant at only the .07 point.

The difference between conditions during the first three four-minute work periods is even greater, particularly if we note that the modal category is 100 per cent in the clear condition and only 40 to 49 per cent for subjects in the unclear condition. The greater differences in the early periods may in part be explained by the fact that during the last periods the builders were particularly emphatic in their requests for pieces. This stronger language was put in purposely to allay suspicion among those subjects who had not been conforming till that point. However, this may

have had the additional effect of increasing conformity among the unclear subjects and of making for some animosity among clear subjects who had been conforming until that point. This explanation is supported by the responses to questions about task-involvement during the early periods and in the final questionnaire (see Table 4). Taken as a whole, the data on productivity tend to support the hypothesis.

TABLE 8

GROUP INFLUENCE

A. Distribution of subjects according to percentage conformity over total of six induction periods

	100%	90–99%	80–89%	70–79%	60–69%	50–59%	40–49%	-39%
Clear	14	8	2	1	3	2	5	4
Unclear	6	6	6	1	5	7	4	4

CR = 1.51, p = .07, by one-tail tau-test (11)

B. Distribution of subjects according to percentage conformity over first three induction periods

	100%	90–99%	80–89%	70–79%	60–69%	50–59%	40–49%	-39%
Clear	16	5	2	2	4	4	2	4
Unclear	7	5	1	3	4	5	10	4

CR = 1.71, p = .05, by one-tail tau-test

Summary

In this experiment we have continued the investigation of the effects of varied clarity of goals and paths, specifically goals and paths that stemmed from the activities of a group. When an individual is in an interdependent relationship with a group, we hypothesized that unclarity of group goals and paths would have effects not only on the individual's basic adjustment but also upon his relationship with his group. By manipulating our experimental conditions with tape-recordings, we were able to produce one condition in which the group goal and path were clearly perceived by the individual, another in which he was unaware of what the group was building or of the procedure being followed. In all cases, the subject felt that the others had a clear goal and plan, even if he did not know what it was.

When an individual is in an interdependent relationship with a group, we hypothesized that unclarity of group goal and path would have negative implications for the member's relationship with his group, as well as for his own basic individual adjustment. Our hypotheses were, by and large, well supported: Comparing the two experimental conditions, we

found that, as an individual, the subject in the clear condition was more interested in his personal task and showed less hostility. As a group member, the subject who had a clear picture of his group goal and group path experienced greater feelings of group-belongingness, particularly as manifested in an involvement with the group goal and in sympathy with group emotions. He was also more able to perceive social differentiation and more willing to accept influence from his group, than subjects who were unclear about the goals and paths of their group. Hypotheses regarding the effects of clarity on the individual's self-evaluation, his evaluation of his group, and the amount of nondirected tension received only scant support.

Discussion

The findings from this and other studies of the effects of unclarity on individual adjustment have particular implications for a modern society, where hierarchization and specialization have increased the gap between the goal-and-path setters, on the one hand, and the line workers, on the other. We have seen several experiments that demonstrate the influence of differential status or privilege within a group upon the communications system of that group (1, Chap. 42; 6; 12). In all these studies conducted with a variety of people in widely differing situations, there is a consistent difference in communication pattern between low-status and high-status members: whereas the low-status members tend to address a greater amount of communication to those above them in the hierarchy, the high-status members tend to communicate more with one another, or with someone of even higher status. Some experimenters have attempted to explain this unreciprocated upward communication as due to the communication serving as a substitute for actual locomotion—if the worker cannot occupy a high position, he can at least speak to someone who does (1, 6, 12). Hurwitz, Zander, and Hymovitch (Chap. 42) instead attribute upward communication to its threat-reducing qualities in a power relationship. However, one could equally well say that their data demonstrate a restriction in downward communication, the individuals in high-status positions withholding information from those below them.

In order to assess the effects of these differences in communication, it would be interesting to know more about the content that is communicated and withheld by individuals at various levels. Kelley (6) found one interesting distinction—that the individuals in high-status positions were specially likely to communicate work-relevant content to those in lower positions. One would, of course, expect that if there is a restriction in downward communication, the high-status people would economize in their messages at the expense of those topics of conversation which they

did not feel were necessary for the reaching of the external goals of the organization. In the extreme case, they would limit their remarks to their subordinates so as to include only direct statements as to what that subordinate should be doing during a short succeeding time interval. The foreman might tell the worker what the worker should do during the succeeding hour, but nothing about how the worker's job would fit into the entire scheme of things. The schoolteacher might ask her pupils to read specific pages in a history book, but without letting them know how this assignment fitted in with the entire course program. There is still no complete agreement among supervisors about the necessity for keeping their subordinates completely informed of the goals and procedures of the organization. Clearly, research is in order on the effects of varied clarity of the goals and paths of the group upon the behavior of that group. The above study, showing that unclear group goals and group paths have negative effects upon the individual's adjustment to the group situation, may, then, be taken as one case in point.

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22

The Effects of Cooperation and Competition upon Group Process

Morton Deutsch

The concept of *cooperation* and the interrelated concept of *competition* are rarely missing in discussions of interpersonal and intergroup relations. Implicitly, they play a key role in the writings of many social theorists. Yet, despite the obvious significance of these concepts for the understanding and control of social process, there has been little in the way of explicit theorizing and virtually no experimental work with respect to the effects of cooperation and competition upon social process. The work in this area has largely been concerned with the effects of the individual's motivation to achieve under the two different conditions. None of the experimental studies has investigated the interactions between individuals, the group process that emerges as a consequence of the cooperative or competitive social situation.

The purpose of this article is to sketch out a theory of the effects of cooperation and competition upon small (face-to-face) group functioning and to present the results of an experimental study of such effects.

PART I

A Conceptualization of the Cooperative and Competitive Situations with a Development of Some of its Logical and Psychological Implications

In a *cooperative social situation* the goals for the individuals or subunits in the situation under consideration have the following characteristics: the goal regions for each of the individuals or subunits in the situation are defined so that a goal region can be entered (to some degree)

This chapter is a condensation of two separate articles. The reader is referred to the original articles for more complete treatment: *Human Relations,* 1949, 2, 129–152 and 199–231. This material is reprinted by permission of the author and of *Human Relations.*

by any given individual or subunit only if all the individuals or subunits under consideration can also enter their respective goal regions (to some degree). For convenience's sake, the phrase *promotively interdependent goals* will be used to identify any situation in which the individuals or subunits composing it have their goals interrelated by the characteristic defined above.

In a *competitive social situation* the goals for the individuals or subunits in the situation under consideration have the following characteristic: the goal regions for each of the individuals or subunits in the situation are defined so that, if a goal region is entered by any individual or subunit (or by any given portion of the individuals or subunits under consideration), the other individuals or subunits will, to some degree, be unable to reach their respective goals in the social situation under consideration. For convenience's sake, the phrase *contriently interdependent goals* will be used to identify any situation in which the individuals or subunits composing it have their goals interrelated by the characteristic defined immediately above.

It should, perhaps, be noted that there are probably very few, if any, real-life situations which, according to the definitions offered above, are "purely" cooperative or competitive. Most situations of everyday life involve a complex set of goals and subgoals. Consequently, it is possible for individuals to be promotively interdependent with respect to one goal and contriently interdependent with respect to another goal. Thus, for example, the members of a basketball team may be cooperatively interrelated with respect to winning the game, but competitively interrelated with respect to being the "star" of the team.

It is also rather common for people to be promotively interdependent with respect to subgoals and contriently interdependent with respect to goals, or vice versa. For instance, advertising concerns representing different cigarette companies may be cooperatively interrelated with respect to the subgoal of increasing the general consumption of cigarettes but competitively interrelated with respect to the goal of increasing both the relative and absolute sales of a specific brand of cigarette.

No attempt will be made here to describe and analyze further the wide variety of "impure" cooperative and competitive situations which are found in everyday life. The theoretical development to be presented will be primarily concerned with "pure" cooperative and competitive situations. However, it is believed that in many circumstances not much theoretical extrapolation is necessary to handle the more complex situations.

From the definitions of promotively and contriently interdependent goals, it appears to follow that (*a*) any person, X, who has promotively interdependent goals with persons A, B, C, etc., will come to have pro-

motively interdependent locomotions in the direction of his goal with persons A, B, C, etc.; (*b*) any person, Y, who has contriently interdependent goals with persons A, B, C, etc., will come to have contriently interdependent locomotions in the direction of his goal with persons A, B, C, etc.

The above statements are based on the following considerations. Locomotion in the direction of the goal, from any point not in the goal region, may be thought of as a condition for entry into the goal region. Entry into the goal region may be thought of as a part of locomotion in the direction of the goal, entry being the final step in locomotion. It follows that a locomotion by X or Y in the direction of his goal can be considered to be promotively or contriently interdependent with the locomotions of A, B, C, etc., in the direction of their goals, the nature of the interdependence with respect to locomotions depending upon the nature of the interdependence with respect to goal regions.

Several major differences reveal themselves as inherent in the distinctions between the cooperative and competitive social situations. The analysis of the cooperative situation reveals that all the individuals in such a setting occupy the same relative positions with respect to their goals. If any one individual locomotes, the others must also locomote in the same direction. In the competitive situations, the various individuals may occupy the same or different positions with respect to their goals. Locomotion by any individual has no necessary effect on the locomotions of others, though it may affect the relative positions of the various individuals.

Up to this point we have stated some of the consequences logically inherent in the conceptualizations of simple cooperative and competitive situations. No statements have been made which have a direct psychological reference, i.e., a reference in terms of individual life spaces. The statements have had reference only to an objectively defined social space.

The next step called for is to derive psychological implications from these statements by introducing additional psychological assumptions which will somehow relate these statements about events in objective social space to events in individual life spaces. It should be apparent that very complex assumptions are required to make any rigorously derived predictions about behavior from an analysis of the characteristics of an objective social situation. However, as this problem relates to the specific conditions of the experiment to be reported here, we shall make the relatively simple assumption that the perceptions and expectations of an individual are likely to be veridical to his environment if he has had enough experience with the situation, if he has intelligence, and if the situation is simple enough.

We may now proceed to state certain specific hypotheses.

Basic Hypotheses

Hypothesis 1. Individuals who are exposed to the cooperative social situation (*Indiv coop*) will perceive themselves to be more promotively interdependent (in relation to the other individuals composing their group) with respect to goal, locomotions, facilitations, and similar matters, than will individuals who are exposed to the competitive social situation (*Indiv comp*).

Hypothesis 1a. *Indiv comp* will perceive themselves to be more contriently interdependent (in relation to the other individuals composing their group) with respect to such matters as goal, locomotions, and facilitations than will *Indiv coop*.

For convenience's sake, let us direct our attention to the psychological implications of locomotion in the cooperative and the competitive situations. Let us analyze a hypothetical instance with respect to locomotion in the direction of the goal, in which A locomotes in the direction of his goal and the other individuals in the social situation perceive that A is locomoting.

1. THE COOPERATIVE SITUATION. Under these conditions X would be likely to perceive that he has locomoted toward his goal as a consequence of A's actions. Several implications seem directly to follow, if we accept certain additional psychological assumptions:

Substitutability. Since X has locomoted toward his goal as a consequence of A's actions, there is no longer any necessity for X to perform any action which is similar to A's.

Positive cathexis. If we make a rather widely accepted assumption that an entity will acquire positive valence or cathexis if that entity is seen to be promotively related to need satisfaction, it is possible to derive that A's action (which results in locomotion in the direction of the goal) will be positively cathected by X. That is, X is likely to accept, like, or reward A's action.

Positive inducibility. Let us assume that inducibility derives from the fact that the inducible person perceives the inducing entity to be such that it can cause the intensification, continued persistence, or lowering of need tension within himself. Positive inducibility [1] occurs when the inducing entity is seen to be promotive rather than contrient with respect to tension reduction (or when the inducing entity is seen as capable of producing even more tension than before).

Making the above assumption, one can derive that X will stand in the relationship of positive inducibility to A insofar as A's action contributes towards X's locomotion in the direction of his goal.

[1] Positive inducibility is meant to include two related phenomena, (*a*) the production of additional *own* forces in the direction induced, and (*b*) the channeling of existing *own* forces in the direction induced.

Facilitations and hinderings. If X facilitates the locomotion of A in the direction of his goal, he also facilitates his own locomotion. Thus, X's facilitations of others are likely to result in his own locomotion and therefore are also likely to result in tension reduction with respect to that locomotion. His own actions of facilitation (helpfulness) will become positively cathected and will be likely to be manifested in appropriate situations. By similar reasoning, we conclude that acts hindering locomotion in the direction of the goal (obstructiveness) will be negatively cathected and will be avoided.

2. THE COMPETITIVE SITUATION. Under conditions of competition essentially opposite conclusions to those above are to be drawn:

Substitutability. It is evident that there will be no substitutability.

Negative cathexis. The assumption here is parallel to that made in deriving positive cathexis. An entity will acquire negative cathexis if that entity is seen to be contriently related to need satisfaction (and therefore is seen to decrease the probability of need satisfaction). A's locomotions in the direction of his goal will, therefore, be negatively cathected by Y.

Negative inducibility. Assuming that negative inducibility[2] occurs when the inducing entity is seen as contrient with respect to tension reduction, one can derive that Y will stand in the relationship of negative inducibility to A insofar as A's actions lead to locomotions by A which decrease Y's probability of reaching his goal. However, another factor, cognitive in nature, may come into play making Y's relation to B one of ambivalence or noninducibility—the cognition that going in a direction opposite to or away from A's would be going in a direction opposite to or away from his own goal.

Facilitations and hinderings. When others locomote in the direction of the goal, helpfulness will become negatively cathected, obstructiveness positively cathected. The converse should be true for locomotion in a direction opposite to that of the goal.

We can, with the same kinds of assumptions, analyze a hypothetical instance in which B locomotes in a direction away from his goal. Without detailing the analysis, it is evident that in the cooperative situation, substitutability is not expected, but one would expect negative cathexis and negative inducibility. The competitive situation is not so unequivocal. Here one would expect positive cathexis and ambivalent inducibility or noninducibility.

Our statements about substitutability, cathexis, inducibility, and helpfulness are somewhat different in the two social situations, depending upon whether locomotions are made in the direction of the goal or away

[2] Negative inducibility is meant to include two related phenomena, (*a*) the production of additional *own* forces, and (*b*) channeling existing *own* forces in the direction opposite to that desired by the inducer.

from it. To test the theory experimentally, it is necessary, therefore, to make some assumption about the incidence of these two directions of locomotion. We assume that, under the experimental conditions set up to test the theory, in both social situations there will be more locomotions in the direction of the goal than in a direction away from the goal. From this assumption and the foregoing analysis it is possible to assert the following hypotheses:

Hypothesis 2. There will be greater substitutability for similarly intended actions among *Indiv coop* as contrasted with *Indiv comp*.

Hypothesis 3. There will be a larger percentage of actions by fellow members positively cathected by *Indiv coop* than by *Indiv comp*.

Hypothesis 3a. There will be a larger percentage of actions by fellow members negatively cathected by *Indiv comp* than by *Indiv coop*.

Hypothesis 4. There will be greater positive inducibility with respect to fellow members among *Indiv coop* than among *Indiv comp*.

Hypothesis 4a. There will be greater internal (self) conflict among *Indiv comp* than among *Indiv coop*.

Hypothesis 5. There will be more helpfulness towards one another among *Indiv coop* than among *Indiv comp*.

Hypothesis 5a. There will be more obstructiveness towards one another among *Indiv comp* than among *Indiv coop*.

Implications for Group Functioning

Let us turn now to the next step, that of applying some of the psychological implications of the hypotheses derived in the preceding section to the functioning of small face-to-face groups.

Organization

From Hypothesis 4 (positive inducibility), it seems evident that one would expect greater coordination of effort, as well as more frequent interrelationship of activity, among *Indiv coop* than among *Indiv comp*.

Hypothesis 6. At any given time there will be more coordination of efforts (working together, interrelation of activities) among *Indiv coop* than among *Indiv comp*.

Hypothesis 6a. Over a period of time, there will be more frequent coordination of efforts among *Indiv coop* than among *Indiv comp*.

If we assume that the individuals composing the various groups in both the cooperative and competitive situations differ from one another with respect to ability or personal inclinations to contribute, it is possible from the substitutability hypothesis (Hyp. 2) to derive:

Hypothesis 7. There will be more homogeneity with respect to amount of contributions or participations among *Indiv comp* than among *Indiv coop*.

The above hypothesis follows from the consideration that the contribution of an *Indiv coop* can substitute for similarly intended contributions by another *Indiv coop*. This does not hold for *Indiv comp*. In the cooperative situation, if any individual has ability and contributes, there is less need for another individual to contribute, producing greater heterogeneity in amount of contributions.

Making the same kinds of assumptions as above, plus the additional ones that the individuals comprising the various groups differ in respect to either ability, interest, or both, in performing the various functions necessary for successful task completion, it is possible from the substitutability hypothesis to derive:

Hypothesis 8. There will be greater specialization of function (i.e., different individuals fulfilling different functions) among *Indiv coop* than among *Indiv comp*.

If we assume some time or achievement pressure, from the substitutability hypothesis it is also possible to derive:

Hypothesis 9. There will be greater specialization with respect to content or activity (i.e., different individuals taking different aspects of the task and working on them simultaneously) among *Indiv coop* than among *Indiv comp*.

The structure of certain kinds of tasks makes it extremely difficult for this type of specialization to take place. Thus, one would expect fewer differences between *Indiv coop* and *Indiv comp* on some tasks than on others.

If specialization of function occurs, and we assume that expectations are established as a result of this specialization and that these expectations act as a determinant of behavior, we would expect:

Hypothesis 10. There will be greater structural stability (from like situation to like situation) with respect to functions assumed among *Indiv coop* than among *Indiv comp*. This difference will increase with time.

From the lack of substitutability among *Indiv comp* one can derive a rigidity, each individual always trying to fulfill all the functions. Stability of structure among *Indiv coop* may result in some perseverance but there does not seem to be any reason to equate rigidity and stability.

Hypothesis 11. In the face of changing circumstances, more organizational flexibility (change of roles to adapt to circumstances) will be manifested among *Indiv coop* than among *Indiv comp*.

Motivation

From the hypothesis about positive inducibility one can expect:

Hypothesis 12. The direction of the forces operating on *Indiv coop* will be more similar than the direction of the forces operating on *Indiv comp*.

From this hypothesis one would expect more rapid locomotions, i.e.,

more rapid decisions and reaching of agreements by cooperative groups. Another point to be considered here is that of the frame of reference with respect to locomotion in the cooperative and competitive situations. In the latter situation, the individual is oriented to locomotions relative to those of other individuals with whom he is competing; in the cooperative situation, meaningful locomotion units are defined in relation to task completion. One can therefore expect:

Hypothesis 13. The directions of the forces on *Indiv coop* will be more toward task closure than will the forces on *Indiv comp*, i.e., there is more achievement pressure on *Indiv coop*.

From the hypothesis of positive inducibility we can assert that a force on any *Indiv coop* is likely to be paralleled by a force on other *Indiv coop*. Thus, if we define *group motivation* as some complex function of the strength of forces that operate simultaneously on all individuals in the group, there follows:

Hypothesis 14. The group force in the direction of the goal in a cooperative group will be stronger than such a group force in a competitive group.

From positive inducibility we would expect more additional own forces to be induced on *Indiv coop* once he is exposed to induction by other members. In the competitive situation, due to combined negative and positive induction, one would also expect the production of additional own forces. If to the concept of the sum of the strength of forces operating on an individual we coordinate interest, or involvement, there does not seem to be any clear-cut rationale for predicting differences between the situations.

Hypothesis 15. There will not be a significant difference in the total strength of the forces (interest, involvement) operating on *Indiv coop* and *Indiv comp*.

Communication

From the substitutability hypothesis and the additional assumptions that (*a*) it is perceived that locomotion takes place either through the utterance of many good ideas, i.e., the production of many signs that will be evaluated highly, or through the frequent persuasion or informing of others via communication; (*b*) quantitative efforts do not seriously interfere with quality or that, if they do, quantity is seen to be as important as or more important than quality; and (*c*) the time available allows for more production of signs than are necessary for optimal solution of any problem, it is possible to derive:

Hypothesis 16. When the task structure is such that production in quantity of observable signs is perceived to be a means for locomotion, there

will be a greater total of signs produced per unit of time by *Indiv comp* than by *Indiv coop*.

From the hypothesis about the coordination of effort in tasks (Hyps. 6 and 6a), one would expect:

Hypothesis 17. When the task structure is such that locomotion is possible without the production of observable signs, there will be a greater total production of such signs per unit time by *Indiv coop* than by *Indiv comp*.

If from the communicator's point of view communication can be considered a locomotion or a means of locomotion, the state of receptivity, i.e., the readiness to be aroused, in the communicatee can potentially facilitate or hinder the locomotions of the communicator. From the hypotheses concerning helpfulness and obstructiveness (Hyps. 5 and 5a) one can derive:

Hypothesis 18. There will be less attentiveness to one another's productions of signs among *Indiv comp* than among *Indiv coop*.

If attentiveness is a condition for the arousing of common significata, there follows:

Hypothesis 19. The production of signs will less frequently result in common significata among *Indiv comp* than among *Indiv coop*.

Even when attentiveness is present, there probably will be a greater likelihood of distortion by communicatees in the competitive situation, since in this situation locomotion is likely to be perceived in terms of its effect on relative position, while in the cooperative situation the locomotion of any individual is likely to be perceived as resulting in the locomotion of the others. The consequence of this difference is that the expressive characteristics of the production of signs are likely to be more significant to *Indiv comp*. A sign is expressive if the fact of its production is itself a sign to its interpreter of something about the producer of the sign.

Hypothesis 20. Common signification, even when attentiveness is optimal, will be less prevalent among *Indiv comp* than *Indiv coop*.

From the hypothesis of positive inducibility, there follows directly:

Hypothesis 21. There will be more common appraisals (mutual agreements and acceptances) of communications by communicators and communicatees among *Indiv coop* than among *Indiv comp*.

Orientation

From the hypothesis about communication, one can assert:

Hypothesis 22. *Indiv coop* will have more knowledge about other active members than will *Indiv comp*.

Group orientation, as we define it, exists to the extent that there is

commonality of perception among the members. It can be assessed in relation to goals, position at a given time, direction to the goal, or steps in the path to the goal. From the hypotheses concerning communication and positive inducibility, one can derive:

Hypothesis 23. There will be more group orientation among *Indiv coop* than among *Indiv comp*.

Group Productivity

From the hypothesis with respect to strength of group motivation (Hyp. 14), assuming that locomotion will proceed more rapidly the stronger the motivation, one can derive:

Hypothesis 24. *Indiv coop* as a group will produce more per unit of time than will *Indiv comp* as a group.

Hypothesis 24a. It will take less time for *Indiv coop* as a group to produce what *Indiv comp* as a group produce.

Let us assume that any or all of the following are negatively related to group productivity in respect to quality of product: lack of coordination, communication difficulties, persisting internal conflict, and lack of group orientation. We can then derive:

Hypothesis 25. The qualitative productivity of *Indiv coop* as a group will be higher than that of *Indiv comp* as a group.

From the hypotheses about communication and about positive inducibility, with the additional assumption that the individuals in the various groups have information and experience that can benefit the others, it is possible to derive:

Hypothesis 26. *Indiv coop* will learn more from one another than will *Indiv comp*. (The more knowledgeable and experienced of *Indiv coop* will, of course, learn less than the not so well-informed *Indiv coop*.

Interpersonal Relations

From the hypotheses about cathexis (Hyps. 3 and 3a), we expect the actions of fellow members to be more positively cathected among *Indiv coop* than among *Indiv comp*. We also expect the perceived source of these actions to acquire, to some extent, a cathexis similar to that held with respect to the actions. Thus, there follows:

Hypothesis 27. There will be more friendliness among *Indiv coop* than among *Indiv comp*.

By similar reasoning, it follows that the cathexis will be generalized to the products of the joint actions of fellow members and oneself, i.e., the group products. Thus, we propose:

Hypothesis 28. The group products will be evaluated more highly by *Indiv coop* than by *Indiv comp.*

If we define *group functions* as any actions which are intended to increase the solidarity of the group, or to maintain and regulate the group so that it functions smoothly, and assert that group functions are seen to be helpful, from the hypothesis about helpfulness (Hyp. 5a) there follows:

Hypothesis 29. There will be a greater percentage of group functions among *Indiv coop* than among *Indiv comp.*

If we define *individual functions* as any actions of the individual which are not immediately directed toward task solution and which are not group functions (actions which are obstructive, blocking, aggressive, or self-defensive are individual functions), from the hypothesis about obstructiveness (Hyp. 5a) there follows:

Hypothesis 30. There will be a greater percentage of individual functions among *Indiv comp* than among *Indiv coop.*

From the hypothesis concerning communication, it was developed (Hyp. 22) that over a period of time *Indiv coop* should know more than *Indiv comp* about the attitudes of (active) fellow members. Using the same reasoning, and making the assumption that the communication difficulty with respect to this content is also greater for *Indiv comp,* there follows:

Hypothesis 31. The perception of the attitudes of the others towards aspects of one's own functioning in the group by *Indiv coop* should be more realistic than such perceptions by *Indiv comp.*

From the hypothesis about inducibility, there also follows:

Hypothesis 32. The attitudes of any individual with respect to his own functioning should be more similar to the attitudes of the others with respect to his functioning among *Indiv coop* than among *Indiv comp.*

From Hypothesis 31 and the hypothesis about cathexis, we can derive with respect to *Indiv coop* that he has a favorable effect on the others in the group. If we make the assumption of *autistic hostility,* that is, that hostile impulses under conditions of reduced communication tend to create the expectation of counter-hostility, we can demonstrate:

Hypothesis 33. *Indiv coop* will perceive himself as having more favorable effects on fellow members than will *Indiv comp.*

The term *attitude of the generalized other* refers to an internalized structure which is developed as a result of introjecting the mutually interacting attitudes of those with whom one is commonly engaged in a social process. From our preceding discussion, it is clear that the development of the attitude of the generalized other requires communication and positive inducibility. There follows, then:

Hypothesis 34. Incorporation of the attitude of the generalized other will occur to a greater extent in *Indiv coop* than in *Indiv comp.*

For present purposes, the *feeling of obligation* to other members will be taken as an operational definition of the degree of internalized attitude of the generalized other.

The Concept of Group

In concluding this theoretical analysis, let us suggest a linkage between the conceptualization of the cooperative situation and the concept of *group*. We propose a linkage similar to certain proposals of Koffka (3) and Barnard (1).

We present the following definitions:

1. A sociological group exists (has unity) to the extent that the individuals composing it are pursuing promotively interdependent goals.

2. A psychological group exists (has unity) to the extent that the individuals composing it perceive themselves as pursuing promotively interdependent goals.

3. A psychological group has cohesiveness as a direct function of the strength of goals perceived to be promotively interdependent and of the degree of perceived interdependence.

The following definitions are reformulations of the above definitions from the point of view of membership:

1a. Individuals or subunits belong in a sociological group to the extent that they are pursuing promotively interdependent goals.

2a. Individuals or subunits possess membership in a psychological group to the extent that they perceive themselves as pursuing promotively interdependent goals.

3a. Individuals or subunits possess membership motive in a psychological group as a direct function of the strength of goals perceived to be promotively interdependent and of the degree of perceived interdependence.

The conceptualization of the cooperative situation is, of course, identical with the definition of social group. It follows that if *Indiv coop* and *Indiv comp* are equated in other respects, *Indiv coop* will possess more unity as a sociological group than will *Indiv comp*. From the logical and psychological considerations advanced above it also follows that *Indiv coop* will possess more unity as a psychological group than will *Indiv comp*. Since all our hypotheses are relative statements based on the assumption that *Indiv coop* and *Indiv comp* are equated in other respects, it is possible to substitute for *Indiv coop* the phrase *a psychological group with greater unity* and to substitute for *Indiv comp* the phrase *a psychological group with lesser unity*.

PART II

An Experimental Study of the Effects of Cooperation and Competition upon Group Process

The Experimental Design

In setting up the experiment to test the hypotheses it was necessary to have the following: (*a*) intelligent and reasonably well-adjusted subjects who would regularly attend experimental sessions over a period of time; (*b*) some degree of control over the goals the subjects strove for (to be able, through manipulations of these goals, to place the subjects in cooperative or competitive situations); and (*c*) a readily observable situation.

The somewhat unorthodox Introductory Psychology course offered by the Industrial Relations Section at the Massachusetts Institute of Technology appeared to provide the needed conditions. Through the excellent cooperation of the Industrial Relations Section, it became possible to make the experimental sessions an integral part of the course. Regular attendance was thus assured. The experimenter-instructor's control over grades and assignments also provided the needed degree of control over the goals of the subjects.

At the first meeting of the various sections, it was announced that the department was interested in doing research on the course and wanted to form some small sections to be composed of five students and one instructor. These sections would meet once weekly as a substitute for the regularly scheduled three one-hour meetings. Nothing was stated about the research except that it had the purpose of improving the course. Volunteers were requested and over 50 were obtained, which was more than enough. The volunteers were then formed into 10 tentative groups on the basis of their available meeting times. Though this very much limited the possibility of matching personalities as well as groups, some flexibility still remained because of the large overlappings of time schedules.

All the volunteers were administered the following tests: The A-S Reaction Study, Wide Range Vocabulary Test, and the University of California ideology questionnaires. On the basis of these tests and other face-sheet data about the individuals, the most deviant students were eliminated as subjects. The time schedules of the remaining subjects did not allow for further shifting of subjects from group to group.

The next step was to match pairs of groups. Each group, at its first meeting together, was told, "You are to be constituted as a board of human relations experts. As experts, each week you will be presented a hu-

man relations problem. Your job is to analyze and discuss the problem and to formulate, in letter form, some written recommendations." They were then given a human relations problem having to do with a question of discipline in a children's camp. A total of 50 minutes for the discussion and writing of recommendations was allowed. Each of the groups was rated by the experimenter on a nine-point scale in terms of the productivity of their discussion of the problem. Groups were then paired off in terms of these ratings, and by a random procedure one of each pair was assigned to the cooperative treatment and the other to the competitive treatment.

Experimental Procedures

Instructions designed to produce the cooperative or the competitive situation were given at the beginning of the second meeting to the appropriate groups. The two sets of instructions are presented below.[3]

Instructions to Cooperative Groups

Puzzle problems. Every week you will be given a puzzle to solve as a group. These puzzles are, in effect, tests of your ability to do clear, logical thinking as a group. Your effectiveness in handling the problem will be evaluated by ranking you as a group in comparison with four other groups who will also tackle the same problems. Each of the five groups will be ranked. The group that works together most effectively will receive a rank of 1, the next most effective group will receive a rank of 2, the least effective group will receive a rank of 5. The ranks that each group receives on the weekly problems will be averaged. At the end of it all, we should be able to have a pretty good picture of each group's ability to do clear, logical thinking.

To motivate you to contribute your best efforts, we will have a reward. The group that comes out with the best average will be excused from one term paper and will receive an automatic *H* for that paper. That is, if your group receives the highest rank, all of you will receive an automatic *H*.[4]

You are to come out with one solution as a group. When you have decided as a group that you have reached a solution, let me know by handing me your answer written on this answer sheet.

Human relations problems. There are two principal factors determining your grade for this course: (*a*) the discussions in class of the human relations problems, and (*b*) the papers you hand in periodically.

Your grade for the discussions in class will be determined in the following manner:

Each week the plans or recommendations that the group comes out with as a result of discussion will be judged and evaluated by ranking them in comparison

[3] "Pure" cooperative and competitive situations were not created by the instructions. Other goals, related to such needs as recognition and affiliation, made it possible for these instructions to produce only relative differences of cooperation and competition.

[4] An *H* at M.I.T. is the highest grade obtainable.

with the efforts of four other similar groups. The group whose discussions and recommendations are judged to be best (in terms of both quality and quantity of ideas) will receive a rank of 1, the next best group a rank of 2, and so on; the worst group will receive a rank of 5.

Every member of the group will be given the rank that his group receives. That is, all members of a group will receive the same rank, the rank being determined by how good their group discussions and recommendations are.

The ranks that are received weekly will be averaged and used in making up that part of the grade which is based on class discussion.

Thus, in effect, you are to consider the discussions of these human relations problems presented to you weekly as a test in which your group rank or grade is determined by your ability to effectively apply insight to these problems. Remember, the group whose discussions and recommendations are best in quality and quantity will get the highest grade; the group whose discussions and recommendations are worst will get the lowest grade.

In this meeting, as in all the other meetings, you will consider yourself to be a board of human relations experts. As such, you have been presented with the following problem which I will read to you. You may glance at your copies of the problem as I read, if you wish to do so. (*The problem was then read by the experimenter.*)

You will be allowed a total of 50 minutes for both the discussion and the writing of recommendations. You are to write your recommendations in letter style, on this form which I have provided.

You will be notified when you have only 20 minutes, 10 minutes and 5 minutes left.

Instructions to Competitive Groups

Puzzle problems. Every week you will be given a puzzle to solve as a group. These puzzles are, in effect, tests of your individual abilities to do clear, logical thinking. The contributions that each of you make to solving the weekly puzzle will be ranked, so that the person who contributes most to the solution will receive a rank of 1, the one who contributes next most will receive a rank of 2, etc. The one who contributes least will receive a rank of 5. The ranks that each of you receive on the weekly problems will be averaged. At the end of it all, we should have a pretty good picture of each individual's ability to do clear, logical thinking.

To motivate you to contribute your best individual efforts, we will have a reward for the individual who comes out with the best average. He will be excused from one term paper and will receive an automatic *H* for that paper.

You are to come out with one solution as a group. When you have decided as a group that you have reached a solution, let me know by handing me your answer written on this answer sheet.

Human relations problem. There are two principal factors determining your grade for this course: (*a*) the discussions in class of the human relations problems, and (*b*) the papers you hand in periodically.

Your grades for the discussion in class will be determined in the following manner:

Each week the contributions that each of you makes to the plan of recommendations that the group comes out with as a result of discussion will be ranked so that the individual contributing the most (in terms of both quality and

quantity of ideas) to the group plan will receive a rank of 1, the individual contributing next most will get a 2, and so on; the individual who contributes least will get a 5.

The ranks that each individual receives from week to week will be averaged and will be used in making up that part of his grade which is based on class discussion.

Thus, in effect, you are to consider the discussions of these human relations problems presented to you weekly as a test, in which each of you is being ranked and graded on your individual ability to effectively apply insight to these problems. Remember, the individual who contributes most in quality and quantity to the discussions and recommendations will get the highest grades; the individual who contributes least will get the lowest grades.

In this meeting, as in all the other meetings, you will consider yourself to be a board of human relations experts. As such, you have been presented with the following problem which I will read to you. You may glance at your copies of the problem as I read, if you wish to do so. (*The problem was then read by the experimenter.*)

You will be allowed a total of 50 minutes for both the discussion and the writing of recommendations. You are to write your recommendations in letter style, on this form which I have provided.

You will be notified when you have only 20 minutes, 10 minutes, and 5 minutes left.

The cooperation of the subjects in not discussing problems and procedures outside of the group meetings was solicited. The same instructions were repeated at each group meeting. Subjects in both the cooperative and competitive groups were not informed about their weekly grades until the end of the experiment.

During the five weeks of experimentation, each of the groups met once weekly for a period of approximately three hours. The schedule of a meeting was as follows: (*a*) The experimenter read the appropriate instructions for the puzzles. (*b*) The group undertook the solution of the puzzle. (*c*) The students filled out a brief questionnaire while the observers made various ratings. (*d*) The experimenter read the appropriate instructions for the human relations problem. (*e*) The group was allowed a total of 50 minutes for the discussion and writing of recommendations. (*f*) The students then filled out a lengthy questionnaire. (*g*) There was a 10–15 minute break. (*h*) The rest of the three hours the experimenter lectured, encouraging active discussion, on psychological principles such as are involved in "need theory," "level of aspiration," and "conflict." Each of the 10 groups received the same informal lectures in any given week.

It should be clear that the discussion and solution of both the puzzles and the human relations problems were undertaken by the various groups without the participation of the experimenter-instructor. During these discussions he sat at a table with the other observers and functioned as an observer.

It should be emphasized that the only differences introduced into the three-hour meetings by the experimenter-instructor were the differences in instructions read to the cooperative and competitive groups. The experimenter-instructor tried to create a friendly, informal, but impersonal relationship with all groups.

The Problems

The background considerations previously outlined dictated that human relations problems be used as group tasks. In addition, for comparative purposes, it was thought that it would be interesting to have the groups confronted with problems of a rather different type. The human relations problems are tasks in which there are no clearly discernible objective criteria of locomotion; they are tasks in which the group itself, through consensus, provides the criteria for judging locomotion. In addition, the content of these problems is likely to evoke strongly-held personal value systems. The puzzle problems were, for convenience, chosen for contrast. Due to their objective (i.e., logically demonstrable) solutions, locomotion could take place without group consensus. This, of course, provided the possibility for relatively more individual work in the puzzles than in the human relations problems. The relative lack of ideological relevance of the content of the puzzle problems also made conflict more likely in the human relations problems.

It is possible that the sequence in which the problems were presented might influence the results obtained. Care was taken, therefore, to control this influence. With the limited number of subjects and groups available it was decided that a latin-square design would be most appropriate. This design makes it possible to vary systematically from group to group the sequence in which the different problems were presented. It permits the effective elimination and estimation (by statistical methods) of the effect of differences among groups, due to the effect of sequence in which the problems are presented, and the effect of different kinds of problems.

Measuring Instruments

Instruments Used by the Observers

For most of the experiment there were four observers. Two major tasks, among others, were assigned to the different observers.

1. THE FUNCTIONS OBSERVATIONS SHEET. The job of the observer was to categorize each participation of the members in terms of the following: (*a*) who spoke (or gestured), (*b*) to whom the remark was addressed, (*c*) the intent of the participant, and (*d*) the length of the participation. Arbitrarily it was decided to use the *utterance* to define a unit of par-

ticipation, with the exception that if more than one function distinctly occurred in any utterance two or more categorizations would be made. To provide the possibility of cross-analysis with other instruments, a new *functions sheet* was used for each five-minute period. To facilitate tabulation no attempt was made to retain sequence of utterances or the linkage "who-to-whom."

The categories used in the Functions Observation Sheet were divided into three broad groupings: [5]

Task functions include participations which are directed toward the task with which the group is confronted. These functions have as their immediate purpose the facilitation of problem solution. Included in this grouping are such functions as "initiator-contributor," "information-giver," "position-stater," "elaborator," "coordinator," "orientor," "evaluator-critic," "energizer," and "information-seeker."

Group functions include participations which are directed toward the functioning of the group. They have for their immediate purpose the maintenance, strengthening, regulation, or perpetuation of the group. Included here are such functions as "encourager-rewarder," "harmonizer-mediator," "good group member," "gate-keeper," "standard-setter," "follower," and "group observer."

Individual functions include participations which are directed toward the satisfaction of the participant's individual needs. They have for their immediate purpose the reaching of an individual goal which is neither task nor group relevant. The goal is individual in the sense that the satisfaction aimed at by the participant cannot be participated in by the others, either at all or in the same way. Such functions are grouped here as "play-boy," "sympathy-seeker," "aggressor," "dominator," "blocker," "recognition-seeker," "self-defender," and "self-observer."

The observer, using this instrument, was trained for approximately 30 hours before observing the experimental group meetings.

2. THE OVER-ALL RATING SCALES. These are a series of nine-point rating scales which were rated by each observer at the end of each problem. They covered such things as group-discussion productivity, group orientation, self-centeredness, involvement, communication difficulties, attentiveness, and acceptance-rejection. All the rating scales apply to the entire discussion of any given problem.

In considering the various ratings, we should keep in mind that it was impossible to maintain any absolute standards. The ratings more or less

[5] This classification was developed by the present author in conjunction with this research project. It was also used by the National Training Laboratory in Group Development and was the basis for an article appearing under the authorship of Benne and Sheats (2). For fuller description of this system of classification, see the article by Benne and Sheats.

presumed a standard of judgment based on experience with groups of introductory psychology students. Thus, the emphasis throughout will be primarily on the direction of the obtained differences rather than on size of differences between the two types of groups.

The results themselves give prima-facie evidence that the observing instruments have sufficient reliability for many of the present purposes. The validity of the observations and ratings, however, cannot be directly determined from the results. One of the primary questions that may arise with respect to the validity of the observations may be concerned with a possible bias among the observers. Thus, if the observers were disposed to see the cooperative groups as being better than the competitive groups, any significant results might be a reflection of this predisposition rather than of real differences.

There is no simple way to insure that the observers had no such predispositions. However, two kinds of evidence support the belief that the observers did not bias their observations in terms of any preconceptions about cooperation and competition: [6] (*a*) The observers made impromptu statements to the effect that, if they were allowed to keep the instructions in mind, they would have a better interpretive frame of reference for their observations. (*b*) The second kind of evidence is indirect but, nevertheless, quite convincing. Data collected from the subjects strongly agree with the results from data collected by observers. Since there is no reason to suspect the subjects of bias (they did not know what the experiment was about), this is good indication of lack of bias in the observers.

Instruments Used by the Subjects

1. *The Weekly Questionnaire.* At each meeting after the discussion of the human relations problems, the subjects filled out a questionnaire. The items on the questionnaire consisted for the most part of rating scales which roughly paralleled those in the observers' Over-all Rating Scales. In addition to such scales as attentiveness, communication difficulties, and acceptance-rejection, the subjects rated interest, group-feeling, amount of group cooperation, group productivity, individual productivity, and anticipated reactions of the others to their own contributions.

2. *The Postexperimental Questionnaire.*[7] One week after the last experimental group meeting, the subjects filled out a lengthy questionnaire covering a range of topics. The questionnaire attempted to get at such things as (*a*) when first and last names were learned; (*b*) amount and kinds

[6] The observers were never informed by the experimenter of the hypotheses being investigated.

[7] Due to unavoidable circumstances, this questionnaire was given to only four cooperative groups, totaling 19 subjects, and four competitive groups, totaling 20 subjects.

of social activities mutually engaged in by group members outside of class hours; (*c*) reactions to the small group meetings, the instructor, and the course; (*d*) the importance of different factors in motivating the subjects to achieve during the solution of the problems; (*e*) reaction to the grading system; and (*f*) reaction to being observed.

Experimental Results

Effectiveness of Instructions

It is perhaps important to start out by inquiring about the reactions of the subjects to the two different sets of instructions. Clearly, if the instructions never "got over," one could reasonably question their efficacy in producing differences.

All subjects, when requested (D)[8] to "describe the method by which you were being graded on the human relations problems," responded with an appropriate description. That is, each subject understood and could recall the essentials of the instructions.

In answer to the question (D), "If you had had completely free choice as to the method of grading discussion in class, which would you have preferred?" the following results were obtained:

Grading Method Preferred	Cooperative	Competitive	No Preference
By *Indiv coop*	11	6	2
By *Indiv comp*	6	11	3

Assuming these differences did not exist at the beginning of the experiment, one can conclude that roughly the same percentage of individuals were satisfied with the method of grading to which they were exposed.

Clearly, then, the instructions "got over" to the subjects in both kinds of groups and in such a way as to seem satisfactory to approximately the same percentage in both groups.

Perceived Interdependence

Hypothesis 1 asserts that *Indiv coop* will perceive themselves to be more promotively interdependent than will *Indiv comp*. Table 23.1 presents some relevant data.

Group-centeredness (we-feeling) was rated by the observers to be considerably higher in the cooperative groups for both the puzzles and the human relations problems. The ratings of the subjects, in the questionnaire pertaining to the human relations problems, give the same results.

[8] From this point on, (A) will refer to the *Over-all Rating Scales*, (B) to the *Functions Observations Sheet*, (C) to the *Weekly Questionnaire* filled out by subjects, and (D) to the *Postexperimental Questionnaire*.

Indiv coop give themselves credit for more "group feeling" than do *Indiv comp*. These differences with respect to group-centeredness and group-feeling are significant at the 1% level for both the puzzles and human relations problems. Thus, the evidence gives support to the first part of the hypothesis (perceived promotive interdependence).

TABLE 23.1

DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS ON DATA RELEVANT TO HYPOTHESES OF PERCEIVED PROMOTIVE AND CONTRIENT INTERDEPENDENCE[9]

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Group-centeredness (A)	H. R.	+2.98	.001
Group-centeredness (A)	P	+2.54	.001
Group-feeling (C)	H. R.	+1.20	.01
Competitiveness (C)	H. R.	− .37	*
Desire to excel others (D)	H. R.	−2.30	.03
Desire to excel others (D)	P	−2.20	.01

* The differences for three of the pairs are in the same direction as the total mean difference; these differences have *p* values of .01, .01, and .13 respectively. The differences for the other two pairs are in an opposite direction; these differences have *p* values of .14 and .23

The second part of the hypothesis (*Indiv comp* will perceive themselves to be more contriently interdependent than will *Indiv coop*) is partly supported by the same evidence. Thus, the competitive group members were rated to be more self-centered by the observers. Likewise, *Indiv comp* rated themselves as being more self-oriented than did *Indiv coop*. "Perceived contrient interdependence," however, seems to include, in addition to "self-centeredness," the notion of "I" versus "the others." To measure this component, the subjects were asked (C), in reference to the human relations problem, "How competitive with the other members in your group did you feel you were, during the discussion?"

The results obtained here are not so conclusive, though they tend to support the hypothesis (see Table 23.1, competitiveness). It seems probable that the lack of clean-cut results is a reflection of the differing interpretations placed on the word *competitiveness* by *Indiv coop*. This interpretation is supported by the fact that when the question was phrased, "How much did you desire to excel others?" on the Postexperimental Questionnaire, significant differences were obtained in the predicted direction.

[9] The following symbols are being used in the various tables: P = Puzzles; H. R. = Human Relations problems; (A), (B), (C), or (D) = the measuring instrument (see footnote 8); Total *M diff* = average of the differences (cooperative minus competitive) between each of the five paired groups for each of the five experimental weeks. A plus sign indicates that the cooperative groups had more of the variable than did the competitive groups. Total *p* = the *p* value obtained by combining the *p* values for each of the five pairs. A combined value is given only when the direction of the differences for all five pairs is the same as that of the total mean difference.

To sum up, the data support the predictions that perceived promotive interdependence would be greater among *Indiv coop* and that perceived contrient interdependence would be greater among *Indiv comp*.[10]

Organization

Coordination of efforts. Hypothesis 6 asserted that there would be greater degree of coordination of efforts and that coordination would occur more frequently among *Indiv coop* than among *Indiv comp.* Table 23.2 presents the relevant evidence.

TABLE 23.2

DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS ON DATA RELEVANT TO THE HYPOTHESIS CONCERNING COORDINATION OF EFFORT

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Working-together (A)	H. R.	+2.42	.001
Working-together (A)	P	+2.68	.001
Degree of coordination (A)	H. R.	+2.62	.001
Degree of coordination (A)	P	+2.57	.001
Group cooperation (C)	H. R.	+1.18	.001

The observers rated that the cooperative groups worked together more frequently (A) and were more highly coordinated (A) than were the competitive groups. In answer to the question (C), "How cooperatively did the group work together on this problem?" the ratings of *Indiv coop* indicated more working together than did the ratings of *Indiv comp.*

Thus the data give rather definite support to the coordination hypothesis.

Homogeneity of participation. Hypothesis 7 states that there will be less homogeneity with respect to amount of contribution among *Indiv coop* than among *Indiv comp.* The data presented in Table 23.3 provide the evidence relevant to this hypothesis. The variance in amount of contributions among members has been used as the measure of homogeneity. The differences between variances of paired groups were then entered as scores in the latin square and the customary statistical treatment was made.

[10] We proposed in our theoretical discussion that *Indiv coop* has greater unity as a *sociological group* than does *Indiv comp.* Also, *psychological unity as a group, cohesiveness of a group,* and *strength of membership motives* were defined to be direct functions of the degree of perceived promotive interdependence. Thus, it is possible to state the results here more generally. The data support the hypothesis that a sociological group with greater unity will possess more psychological unity than a sociological group with lesser unity. In further comparisons of *Indiv coop* and *Indiv comp,* one should keep in mind the possibility of making similar more general statements.

TABLE 23.3

DIFFERENCES IN HOMOGENEITY OF AMOUNT OF PARTICIPATION BETWEEN COOPERATIVE AND COMPETITIVE GROUPS

Variable	Problem Type	Total	
		M diff	*p*
Homogeneity of participation (B)	H. R.	−2593	*
Homogeneity of participation (B)	P	−518	.16

* The differences for four of the pairs are in the same direction as the total mean difference; these differences have *p* values of .005, .07, .13, and .67 respectively The pair going in the opposite direction has a *p* value of .16.

The data give support for the hypothesis, although the results are not conclusive. In both the puzzles and human relations problems, there is greater homogeneity of participation within competitive groups. Four out of the five pairs in the human relations problem and all of the five pairs in the puzzles go in the direction predicted by the hypothesis.

Further support is given the hypothesis by some additional data which are directly relevant to the basic subsitutability hypothesis. On the Weekly Questionnaire the subjects were asked to indicate the reasons they had for not offering suggestions or thoughts to the group discussion. Of the reasons checked by *Indiv coop,* 47% were in the category "Somebody else said pretty much the same thing," compared to 33% for *Indiv comp.*

Thus, though the results are not conclusive, support is given to the hypothesis that there will be more homogeneity in amount of participation among *Indiv comp* than among *Indiv coop.*

Specialization. A cursory inspection of the data collected on the Functions Observations Sheets revealed a low reliability of the data needed to test Hypothesis 8 (specialization with respect to function). In the statistical tests that were made the data revealed no clear-cut significance (though with respect to all functions there is, on the average, greater specialization of functioning within cooperative groups than within competitive groups).

The evidence relevant to specialization with respect to content or activity (Hyp. 9) is much more clear-cut. Table 23.4 presents the data. The results definitely indicate that with respect to the job of writing the letter of recommendations, asked for in the human relations problems, there were significantly more instances of division of labor in the cooperative groups. Faced with the problem of achievement in a limited amount of time, cooperative members were able to organize themselves so as not to duplicate one another's efforts. Substitutability of one for the other permitted the members to divide up the job into its different aspects and allowed the various members to work on these components simultaneously. In the competitive situation, writing procedure generally followed

TABLE 23.4

AVERAGE NUMBER OF PERSONS SIMULTANEOUSLY ENGAGED IN WRITING RECOMMENDATIONS FOR THE DIFFERENT HUMAN RELATIONS PROBLEMS IN COOPERATIVE AND COMPETITIVE GROUPS

	BARBER SHOP	CHEATING	WW II VET	NEGRO WORKERS	SUPERVISORS †
Coop *	1.8	2.4	2.0	2.8	2.8
Comp	1.2	1.0	1.2	1.8	1.2

* In none of the 25 paired experimental sessions were there more members simultaneously engaged in writing in a competitive group than in its paired cooperative group. In sixteen of the sessions there were more members in cooperative groups engaged in simultaneous writing; in the remaining nine sessions there were no differences between the paired groups.

† For all problems, but the Supervisors, only three persons could write simultaneously; it was possible for four persons to write simultaneously on this one.

either of two extremes: (*a*) One man was assigned the job, usually on the basis of a rotation scheme, and the other members took an active part in supervising the writing. The getting of ideas into written form was seen as a path, thus everyone was actively concerned with what was being written. Since the number of pages, always less than five, prevented the possibility of any compromise—"we each do one"—it was necessary for all to focus on the same activity. As a consequence, it was rare that two members were writing simultaneously. When two or more recorders are shown in the competitive groups, their time of writing did not overlap much. (*b*) A conscientious member took the form and wrote up recommendations while the others discussed. The discussants showed no interest in the write-up, never examining it, their whole attention being directed to the discussion. The written product was, more or less, considered to be an irrelevant side issue for some conscientious soul to handle. It was not seen as a necessary path, thus it was perfectly permissible for anyone who wished to do so to take over the function of writing.

Motivation

Hypothesis 12 asserts that the directions of the forces operating on *Indiv coop* should be more similar than the directions of the forces on *Indiv comp*. If this hypothesis is correct, one should expect greater speed in group locomotion for the cooperative groups. The data with respect to locomotion are presented under the heading of *Productivity* below. The data give strong support to the hypothesis.

The validity of the hypothesis presupposes the validity of the basic hypothesis with respect to positive inducibility. The following questions (C), "How did you react to the ideas or suggestions of others?" and "How frequently was your own thinking or reaction affected by what the others were saying?" are relevant. Table 23.5 indicates that *Indiv coop* were

affected by the ideas of others significantly more often than were *Indiv comp*. Table 23.7 indicates, further, that *Indiv coop* were markedly more agreeable and acceptant towards the ideas initiated by others. These two sets of facts provide direct support for the basic hypothesis with respect to positive inducibility and indirect evidence for Hypothesis 12.

TABLE 23.5

DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS ON DATA RELEVANT TO THE MOTIVATION HYPOTHESES

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Effect of other's ideas (C)	H. R.	+ .78	.001
Achievement pressure (A)	H. R.	+1.00	.01
Achievement pressure (A)	P	+ .49	*
Strength of motivation to achieve (D)	H. R.	+ .83	.01
Strength of motivation to achieve (D)	P	+ .20	not sig.
Involvement (A)	H. R.	+ .15	not sig.
Involvement (A)	P	+ .23	not sig.
Interest (C)	H. R.	− .10	not sig.

* The differences for four of the five pairs are in the same direction as the mean differences; these differences have *p* values of .04, .13, .24, and .68. The *p* value for the pair going in the opposite direction is .66.

From Hypothesis 13 one would predict that there would be more pressure for achievement in the cooperative groups than in the competitive ones. The ratings of the observers and of the subjects both produce significant differences in the predicted direction for the human relations problem. The direction of the differences obtained for the puzzles is in line with the hypothesis, but the size of the differences is not significant.

Hypothesis 15 states that there is nothing inherent in the cooperative or competitive situations which should produce differences in the strength of force operating on individuals in the two situations. *Interest* or *involvement* is considered to be an operational measure of total situationally relevant forces. The data of Table 23.5 clearly provide no basis for rejecting the hypothesis. The differences between cooperative and competitive groups with respect to involvement or interest in the problems at hand were negligible.

Communication

Hypotheses 16 and 17 assert that the volume of participation of the cooperative as contrasted with the competitive groups will be (Hyp. 16) smaller for the human relations problems, and (Hyp. 17) greater for the puzzles. The relevant data are presented in Table 23.6.

TABLE 23.6

DIFFERENCES IN PARTICIPATION VOLUME, ATTENTIVENESS, AND COMMUNICATION DIFFICULTIES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Participation volume * (B)	H. R.	−22.8	†
Participation volume (B)	P	+118	.001
Attentiveness (A)	H. R.	+1.04	.01
Attentiveness (A)	P	+1.50	.001
Attentiveness (C)	H. R.	+ .42	‡
Communication difficulties (A)	H. R.	−1.94	.001
Communication difficulties (A)	P	−1.39	.01
Difficulty in communicating to others (C)	H. R.	− .81	.001
Difficulty in understanding others (C)	H. R.	− .67	.001

* *Participation Volume* has the meaning of Total Number of Participations per 45 minutes Thus, all participation volumes are equaled in terms of a constant time unit.

† The differences for three pairs are in the same direction as the total mean difference; these differences have *p* values of .007, .06, and 20. The other two pairs go in the opposite direction; these differences have *p* values of .12 and .73

‡ The differences for three pairs are in the same direction as the total mean difference; these differences have *p* values of .03, 04, and 72. The other two pairs, in the opposite direction, both have *p* values of .83.

The observers rated that there were significantly fewer communication difficulties among *Indiv coop* than among *Indiv comp* for both the human relations problems and puzzles. Further support for Hypothesis 19 is obtained from the subjects. In answer to the question (C), "Did you find that you had difficulty in getting your ideas across to others?" the ratings of *Indiv coop* expressed significantly less difficulty than did the ratings of *Indiv comp*. The same results were obtained in answers to the following question (C), "Did you find that you had difficulty in trying to follow or get the point of what the others were saying?" Thus, the competitive subjects experienced more difficulty with respect to the spread of common signification, both in the roles of communicators and communicatees.

Hypothesis 21 asserts that there will be more common appraisals of communications in the cooperative groups than in the competitive groups. Table 23.7 presents the evidence for the hypothesis.

The observers rate greater acceptance of one another's ideas in the cooperative groups than in the competitive groups in both kinds of tasks. The subjects' ratings also strongly support the hypothesis. In answer to the questions (C), "How did you react to the suggestions of others?" and "How did the others tend to react to your ideas or suggestions?" the ratings made by *Indiv coop*, as contrasted with those of *Indiv comp*, indicate both significantly more agreement with the ideas and suggestions of others and perception of more agreement from other group members.

Two categories on the Functions Observation Sheets, "evaluator-critic" and "follower," also provide some relevant data, although it should be

TABLE 23.7

DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS ON DATA RELEVANT TO THE HYPOTHESIS ABOUT COMMON APPRAISALS OF COMMUNICATIONS

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Acceptance of each other's ideas (A)	H. R.	+1.80	.001
Acceptance of each other's ideas (A)	P	+ .95	.01
Agreement with others (C)	H. R.	+ .81	.001
Agreement by others (C)	H. R.	+ .61	*
Follower (B)	H. R.	+4.34	.01
Follower (B)	P	+2.05	.25
Evaluator-critic (B)	H. R.	−3.36	.04
Evaluator-critic (B)	P	− .95	not sig.

* The differences for four of the five pairs are in the same direction as the total mean difference; these differences have *p* values of .01, .02, .04, and .38. The other pair, in the opposite direction, has a *p* value of .92.

kept in mind that both categories may contain a few items which are not specifically related to the notion of *common appraisal.* Thus, "evaluator-critic" probably contains some items which are positive evaluations and "follower" includes some items which connote understanding but not necessarily agreement. Nevertheless, for both categories there are significant differences between the cooperative and competitive groups on the human relations problems in the direction of the hypothesis. The differences with respect to the puzzles are in the predicted direction but are not significant.

Orientation

Hypothesis 23 asserts that there will be more commonality of perception with respect to position and direction to the goal among *Indiv coop* than among *Indiv comp.* The relevant data are presented in Table 23.8.

According to the observers' ratings the cooperative groups were significantly more oriented ("aware of where they are and where they are

TABLE 23.8

DIFFERENCES IN DEGREE OF ORIENTATION AND ORDERLINESS BETWEEN COOPERATIVE AND COMPETITIVE GROUPS

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Orientation (A)	H. R.	+1.70	.001
Orientation (A)	P	+1.92	.01
Orderliness (A)	H. R.	+1.99	.001
Orderliness (A)	P	+1.96	.001

going") than the competitive groups for both kinds of tasks. The hypothesis is also given indirect support by the observers' ratings which indicate that the cooperative groups were also significantly more orderly and systematic in their approach to the various problems.

Productivity

Hypothesis 24 asserts that, since speed of locomotion will be greater in cooperative groups, quantitative productivity per unit of time will be less in the competitive groups. The evidence in Table 23.9 provides striking support. Cooperative groups solve the puzzle problems more

TABLE 23.9
DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS ON VARIOUS MEASURES OF PRODUCTIVITY

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Discussion productivity (A)	H. R.	+1.86	.001
Discussion productivity (A)	P	+1.90	.01
Discussion insight (A)	H. R.	+1.25	.001
Discussion insight (A)	P	+1.72	.02
Time per solution	P	−7.35 minutes	.01
Number of words in written product	H. R.	+299 words	.001
Average individual productivity (A)	H. R.	+ .15	not sig.
Average individual productivity (A)	P	+ .58	.07
Learning from discussion (C)	H. R.	+ .25	*
Grades on term paper		+2.85	.18

* Differences for three pairs are in the same direction as the total mean difference; these differences have *p* values of .07, .07, and .39. The two pairs, in the opposite direction, have *p* values of .30 and .45.

rapidly than do the competitive groups and they also produce more on the human relations problems (number of words written in the recommendations are taken as a crude measure of quantity of productivity).

Hypothesis 25 states that qualitative productivity will be higher for the cooperative groups. Clear support is given to this hypothesis by the observers' ratings of discussion productivity (Table 23.9) and by the judges' ratings of written recommendations for the human relations problems (Table 23.10). According to observer ratings, the discussions of the cooperative groups not only came out with more fruitful ideas for handling the problem presented to them, but also their group discussions showed more insight and understanding of the nature of the problem

being posed to them. These differences with respect to group productivity and group insight are significant for both kinds of tasks.

Average individual productivity must not be confused with group productivity. Group productivity ratings referred to the ideas that were agreed upon and accepted as a basis for action by the group. The ratings of average individual productivity show no significant difference for the cooperative and competitive groups on the human relations problems. For the puzzles, there is a difference approaching significance favoring *Indiv coop*. The latter result is probably explained by the fact that the greater communication within cooperative groups meant that individuals were less likely to stay in blind alleys for long periods of time.

TABLE 23.10

DATA RELEVANT TO HYPOTHESIS THAT QUALITATIVE PRODUCTIVITY WILL BE HIGHER IN COOPERATIVE GROUPS

CORRELATIONS AMONG RATINGS OF GROUP PRODUCTS BY THREE JUDGES

Judges 1 & 2	Judges 1 & 3	Judges 2 & 3	Average of Correlations
.42	.46	.61	.50

DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS ON MEAN OF JUDGES' RATINGS

	Total	Pair 1	Pair 2	Pair 3	Pair 4	Pair 5
Mean difference	+2.04					
p	.001	.02	.001	.54	.01	.05

Table 23.10 presents the ratings of each group for each of the five different problems, as made by three different judges. Although it is evident that there is a considerable unreliability in the ratings, it is also clear that despite this there are significant differences between the paired cooperative and competitive groups.

Hypothesis 26 states that *Indiv coop* will learn more from one another than will *Indiv comp*. Table 23.9 indicates that the cooperative group members in three of the five pairs rated themselves as learning more from the discussion of the human relations problem than did the competitive members rate themselves.

The same kind of results are obtained when one examines the grades obtained by the individuals exposed to each of the experimental conditions. The grades being considered were those obtained on the first term paper handed in by all the subjects. The paper was due on the final week of the experiment. Statistical analysis reveals that the differences are in the predicted direction but not statistically significant.

Thus, the hypotheses predicting greater group productivity for the cooperative groups have received strong support from the data, but the evidence with respect to the hypothesis predicting greater learning for *Indiv coop* is far from conclusive. It should be noted that the discussions took place at the very beginning of an introductory psychology course. Perhaps at such an early stage the subjects were not particularly ready to have cognitive changes induced by fellow members under either of the two conditions.

Interpersonal Relations

From the basic hypothesis with respect to cathexis, it was derived that *Indiv coop* would be more friendly towards one another in the group meetings than would *Indiv comp* (Hyp. 27). Table 23.11 presents the relevant data.

TABLE 23.11

DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS IN FRIENDLINESS, AND OTHER RELATED DATA

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Friendliness (A)	H. R.	+1.26	.001
Friendliness (A)	P	+ .89	.01
How good were contributions of others (C)	H. R.	+ .70	*
Encourager (B)	H. R.	+ .96	†
Encourager (B)	P	+ .20	not sig.
Aggressor (B)	H. R.	−1.16	.01
Aggressor (B)	P	− .64	not sig.
Time taken to learn last names (D)		− .20	.06
Correctness of spelling of last names (D)		+ 5.3	.11

* Differences for four pairs are in the same direction as the total mean difference; these differences have *p* values of 005, .01, .01, and 07 The other pair, in the opposite direction, has a *p* value of .87.
† Differences for four pairs are in the same direction as the total mean difference; these differences have *p* values of .001, .18, .57, and .62. The other pair has a *p* value of .57.

Observers' ratings reveal that *Indiv coop* were significantly more friendly than *Indiv comp* during discussions of both types of problems. The hypothesis receives additional support from the observation of functions during discussion of the human relations problems. A greater percentage of encouraging or rewarding remarks was made in cooperative groups, and a significantly larger proportion of aggressive remarks was made in the competitive groups. The puzzle problems yielded such a low frequency of all emotionally laden functions that no significant differences could be established between groups.

The cooperative subjects in answer to the question (C), "How good were the contributions of others?" rated one another's contributions to be better than did the competitive subjects. This result can also be taken to indicate greater positive cathection among *Indiv coop.*

The next question of interest has to do with the extent of the generalization of the friendliness shown during the experimental meetings. The question (D), "How much did the weekly small group meetings stand out for you in contrast with the other classes you attend during the week?" is the only relevant measure. The average responses for the cooperative and the competitive groups were not significantly different. On the average, the subjects rated the weekly meetings as, "Thought about some —more prominent in my thinking than some of my other courses, but not more prominent than most of my other courses." Since the experimental sessions were not especially prominent in the lives of the subjects, there is little reason to expect much generalization of cathexis to other areas.

Various measures were taken to test the extent of generalization: ratings of fellow members with respect to desirability as a friend, rating of amount of friendly feeling toward others, time taken to learn first and last names, correctness of spelling of last names, amount of time spent together in outside activities and kinds of activities jointly engaged in outside of class. Table 23.11 presents most of the evidence.

Indiv coop learned one another's last names sooner than did *Indiv comp* (as reported on the final questionnaire). They also spelled one another's names more nearly correctly, but the size of this difference is significant at only the 11% level of confidence. No differences were obtained with regard to learning first names nor in the frequency or kinds of outside activities undertaken together. At the end of the experiment, *Indiv coop* rated themselves as being more friendly towards one another than did *Indiv comp.* These differences, however, are clearly not statistically significant. The data thus indicate that little generalization of cathexis occurred. The relative lack of generalization was probably due to (*a*) the relative lack of importance of the goals involved in the experiment and (*b*) strong restraining forces against any inclinations toward increased sociability which might have resulted from the experimental situation.

Hypothesis 28 states that the group and its products will be evaluated more highly by *Indiv coop* than by *Indiv comp.* Table 23.12 presents the relevant data. In answer to the question (C), "Did the group help your thinking?" the ratings revealed significantly more help among the cooperative than among the competitive members. Similar results were obtained from the question (C), "How good do you think the group's product was?"

According to Hypotheses 29 and 30 there should be a greater percentage

of group functions among *Indiv coop* and a greater percentage of individual functions among *Indiv comp*. The data in Table 23.12 support these hypotheses with respect to the human relations problems but not the puzzles. The lack of difference for the puzzles suggests that (*a*) the objectively demonstrable solution of the puzzles makes it more difficult for individuals to produce the rationalizations necessary for "civilized" blocking or aggressive behavior, and (*b*) a demonstrable solution compels a certain degree of agreement and acceptance, making group functions more likely. Thus, the competitive groups have a significantly greater percentage of group functions in the puzzles than in the human relations problems and a slightly smaller percentage of individual functions in the puzzles. Similar, but less marked, differences are found for the cooperative groups on the two kinds of problems.

TABLE 23.12

DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS ON KINDS OF FUNCTIONS PERFORMED AND EVALUATIONS OF THE GROUP

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
Group help to thinking (C)	H. R.	+1.03	.001
How good was group product (C)	H. R.	+1.22	.01
Total group functions (B)	H. R.	+4.64	*
Total group functions (B)	P	+ .08	not sig.
Total individual functions (B)	H. R.	−3.87	.05
Total individual functions (B)	P	−2.10	not sig.
Blocker (B)	H. R.	−1.40	.01
Blocker (B)	P	− .25	not sig.
Self-defender (B)	H. R.	−1.03	.05
Self-defender (B)	P	− .10	not sig.

* Differences for four pairs are in the same direction as the total mean difference; these differences have *p* values of .001, .001, .01, and .01. The other pair, in the opposite direction, has a *p* value of .05.

Hypothesis 33 states that *Indiv coop* will perceive themselves as having more favorable effects on fellow members than will *Indiv comp*. Table 23.13 indicates that the cooperative subjects saw their fellow members as reacting more positively to their ideas, the competitive members perceived that their ideas were being ignored more frequently, and the cooperative members felt that their contributions would be evaluated more highly.

Hypothesis 34 asserts that there will be greater internalization of the attitude of the generalized other by *Indiv coop* than by *Indiv comp*. Most of the experimental data already discussed are relevant to this hypothesis, but, in the more restricted sense of identification with the attitudes of others, two complementary measures, the feeling of obligation to others

and the desire to win the respect of others, are especially pertinent. Table 23.13 presents data which indicate that *Indiv coop* felt more obligated as members of a group to participate in joint effort than did *Indiv comp*. The desire to win the respect of the other members also played more of a role in the motivation of *Indiv coop* than *Indiv comp*.

TABLE 23.13

DIFFERENCES BETWEEN COOPERATIVE AND COMPETITIVE GROUPS IN PERCEPTION OF EFFECTS ON OTHERS AND IN FEELING OF OBLIGATION TO OTHER MEMBERS

VARIABLE	PROBLEM TYPE	TOTAL	
		M diff	*p*
How did others react to your ideas? (C)	H. R.	+ .61	*
How frequently did others react? (C)	H. R.	+ .49	†
How will others rate your contributions? (C)	H. R.	+ .49	‡
Strength of feeling of obligation to others (D)	H. R.	+2.80	.01
Strength of feeling of obligation to others (D)	P	+1.55	.10
Strength of desire to win respect of others (D)	H. R.	+1.53	.09
Strength of desire to win respect of others (D)	P	+2.38	.001

* Four pairs are in the same direction as the total mean difference; the differences for these pairs have *p* values of .01, .04, .12, and .38. The other pair has a *p* value of .92.

† Four pairs are in the same direction as the total mean difference, with *p* values of .01, .03, .04, and .18. The other pair has a *p* value of .02.

‡ Four pairs are in the same direction as the total mean difference, with *p* values of .01, .02, .06, and .28. The other pair has a *p* value of .33.

Summary and Conclusions

Basic Hypotheses

The evidence for the basic hypotheses is, for the most part, indirect. Data collected to test the more specific hypotheses about group functioning also, in effect, test the basic hypotheses.

The experimental findings give support to the following hypotheses:

1. *Indiv coop* will perceive themselves to be more promotively interdependent and *Indiv comp* will perceive themselves to be more contriently interdependent (Hyp. 1).

2. There will be greater substitutability for similarly intended actions among *Indiv coop* than *Indiv comp*. This hypothesis is supported by data obtained in connection with Hypotheses 7 and 9, but the data are ambiguous with respect to Hypotheses 8 and 16.

3. A larger percentage of actions of others will be positively cathected among *Indiv coop;* a larger percentage of actions of others will be negatively cathected among *Indiv comp* (Hyp. 3).

4. There will be a greater positive inducibility among *Indiv coop* than among *Indiv comp* (Hyp. 4).

5. *Indiv coop* will exhibit more helpfulness and *Indiv comp* will exhibit more obstructiveness (Hyp. 5).

Thus, all in all, the theory of cooperation and competition has been given considerable backing by the present experimental investigation.

Group Functioning

The results, with respect to aspects of group functioning, indicate that *Indiv coop* showed more of the following characteristics than did *Indiv comp:* (*a*) coordination of efforts; (*b*) diversity in amount of contributions per member; (*c*) subdivision of activity; (*d*) achievement pressure; (*e*) production of signs in the puzzle problem; (*f*) attentiveness to fellow members; (*g*) mutual comprehension of communication; (*h*) common appraisals of communication; (*i*) orientation and orderliness; (*j*) productivity per unit time; (*k*) quality of product and discussions; (*l*) friendliness during discussions; (*m*) favorable evaluation of the group and its products; (*n*) group functions; (*o*) perception of favorable effects upon fellow members; and (*p*) incorporation of the attitude of the generalized other.

Indiv comp showed more (*a*) production of signs in the human relations problem, and (*b*) individual functions.

No significant differences were found in the (*a*) amount of interest or involvement, (*b*) amount of specialization of function, and (*c*) amount of learning (though the trend is in favor of *Indiv coop*). Nor did the data reveal any striking developmental differences with time.

Practical Implications

To the extent that the results have any generality, greater group or organizational productivity may be expected when the members or subunits are cooperative rather than competitive in their interrelationships. The communication of ideas, coordination of efforts, friendliness, and pride in one's group which are basic to group harmony and effectiveness appear to be disrupted when members see themselves to be competing for mutually exclusive goals. Further, there is some indication that competitiveness produces greater personal insecurity through expectations of hostility from others than does cooperation. The implications for committees, conferences, and small groups in general appear fairly obvious.

Also, in light of the results of this study, it seems that educators might well reexamine the assumptions underlying their common usage of a competitive grading system. One may well question whether a competitive grading system produces the kinds of interrelationships among students, the task-directedness, and personal security that are in keeping with sound educational objectives.

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23

Effects of Facilitative Role Interdependence on Group Functioning

Edwin J. Thomas

The behavior of a group is strongly affected by the degree of interdependence existing among its members. Groups high in interdependence commonly function effectively and offer mutual benefit to members. For example, when interdependence is high rather than low, members seem to be more attracted to the group, to strive harder to achieve their goals, and to be more responsible to their fellows. Some effects of member interdependence are examined in this study.

In a number of small groups, members were made interdependent by dividing the labor among them while they performed a task. Members in other groups were linked together in interdependence by a common team goal. The conditions were contrasted with others in which members did not divide the labor, and did not work toward a team goal. How these different degrees of interdependence influence the cohesiveness and productivity of groups, the tensions and feelings of responsibility of members, is the problem at hand.

Work in the past has dealt with limited aspects of this problem. Some theorists, such as Durkheim (4) and Spencer (13), stressed the division of labor among persons as a basis of interdependence. More recent thinking of production engineers and others (1, 14, 16) has indicated specific ways by which the simplification or standardization of work operations may result in high mutual dependence among workers. Ecologists have noted that the organization of groups seems to depend upon the available resources and how persons and groups use the resources (7, 11). Some writers have speculated about the effects of interdependence. They have noted the degree and kinds of group solidarity (4, 13), the degree of conflict (2, 11), the amount of productivity (4), and the kinds of norms evolved to regulate behavior (16).

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Particularly pertinent to the focus of this study are two empirical investigations that suggest the importance of distinguishing between interdependence that is facilitating for group members as opposed to interdependence that is hindering. Deutsch (3) conceived of the cooperative social situation as one in which members were "promotively interdependent." Upon comparing this kind of situation with a competitive one in which members were viewed as "contriently interdependent," group members were found to be highly motivated, friendly, and productive. In contrast to these effects of the promotive situation are ones described in a case study by Trist and Bamforth (15). In a coal mine, where workers were highly interdependent in performing tasks, there occurred frequent difficulties and hindrances in the orderly flow of work. As a result miners became hostile and suspicious, oftentimes refusing to cooperate or to work.

Clearly in Deutsch's cooperative groups there was greater facilitation among group members than there was in his competitive groups, or among the coal miners who experienced hindrances in the flow of work. What appears to account for the effects in these different groups is the degree of facilitation among the members in interdependence. While it is correct that group members in the study by Trist and Bamforth were interdependent in the division of labor, whereas this was not the case in Deutsch's study, this difference does not appear to be the cause of the contrasting effects observed. Individuals may help or hinder one another when there is a division of labor or when there is no division of labor; when there is a group goal or when there is no group goal. Thus the *degree of facilitation* is a dimension that may be a factor common both to interdependence based upon a division of labor and to interdependence based upon the goals pursued by members of the group. This study, then, is an experimental examination of the effects of degrees of facilitative interdependence upon the functioning of group members.

Theory

Definitions and Assumptions

We first describe the concept of facilitation when this occurs in the division of labor among persons and in the interdependence among them while working toward a goal.

In a division of labor, interdependence exists to the extent that the task performance of each person serves as a means for the performance of tasks by others. Facilitation occurs to the degree that each person, when performing his task, allows others to perform their task; when persons perform their tasks successfully, paths are opened for the movement

of others towards completion of their tasks.[1] Facilitation as observed in a division of labor has therefore been termed *means-controlling facilitation,* since each person provides the means for the movement of all others in their task performance.

Let us suppose, for example, that two persons share the work on an anti-aircraft crew. The first person hands the shells to the second, and the second loads the shells into the weapon. When the first passes the shell, he provides the means for the second person to load it into the weapon. The first in other words provides a path for the movement of the second person; means-controlling facilitation, then, exists for the second person.

The basis of facilitation is somewhat different in the case of a common team goal. The efforts of each person with a goal common to all other members help the others toward attaining the communal end. That is, the efforts of each person substitute for the efforts of another person in providing movement of everyone toward the joint goal. We refer to *goal facilitation,* then, when the movement of one person toward a group goal provides movement for all others toward this same goal.

Suppose, for example, that two persons have the mutual goal of sorting the good apples out of a bushel of apples of varying quality. The more good apples sorted by one person, the more the other is actually moved toward the mutual goal of having sorted out all of the good apples. Each worker, to the degree that he sorts out good apples, facilitates the work of the other by moving him toward the goal.

More formally *facilitation* is a condition between at least two persons in which one person either makes available to the other paths for objective locomotion (means-controlling facilitation) or one person provides objective locomotion for the other toward a goal (goal facilitation), or both of these conditions. The *degree* of facilitation under conditions of means-control depends upon the proportion of acts performed by one person that allow another's locomotion, to all those acts performed by the first person relative to the second. In goal facilitation, the *degree* to which one person facilitates the work of all others, if all have about equal ability, is one divided by the total number of persons in relationships of goal facilitation to one another.

With these concepts in mind some aspects of interdependence itself may be considered. This theory is restricted to interdependence of persons performing roles in direct relationship with one another and thus, in its present form, has limited generality to broad ecological, political, and economic situations. *Role* is viewed here as the behavior of a person that is regarded by relevant others as appropriate to the position he oc-

[1] Movement refers to actual locomotion in a social situation and is to be distinguished from locomotion in an individual's life space.

cupies. *Role interdependence* may then be conceived as mutual dependence of persons in the performance of their respective roles. For role interdependence to be facilitative, the dependence of each individual upon the other must be facilitative, as this concept was defined earlier. Excluded from consideration here are relationships of hindering interdependence.[2] In short, the theory is restricted to conditions of *symmetrical* facilitation, by which is meant that all persons facilitate one another to approximately equal degrees, and do not also hinder one another.[3]

With all of these restrictions and qualifications it is convenient to adopt symbols to simplify expression. The essential concept in the theory is the degree of mutual facilitation. The degree of *mutual facilitation* then will be referred to hereafter instead of the more correct but cumbersome expression of "the degree of facilitative, symmetrical role interdependence." Whenever the abbreviated expression is used it is understood that the additional limiting terms also apply.

We may now turn to the assumptions of the study. Basic to our discussion of interdependence has been the supposition that facilitation produces entirely different effects upon persons than does hindrance. By definition facilitation is a condition that allows or actually helps group members to move toward successful role performance or goal attainment. Under these conditions we would therefore expect that restraints to locomotion of group members would be minimized. The first assumption states this supposition.

Assumption 1. *Persons in relations of facilitative role interdependence with one another perform their roles so that the magnitude of forces restraining the locomotion of others is minimized.*[4]

When persons facilitate the work of others there evolve expectations about how the others are to behave. More specifically, if a person facilitates another's role performance the other expects the first person to continue to be facilitative of his efforts, and not to hinder him. Because of these expectations, there arise forces upon persons to be responsible to others in order that the others experience minimal hindrance. These pressures to facilitate the work of others are called *responsibility forces.*

[2] *Hindrance,* not dealt with in this study, is distinguished from facilitation as follows: *role dependence is hindering for B if A erects restraints to the locomotion of B.* By role "performance" in the definition of role dependence is meant the behavior of A in connection with carrying out his role.

[3] This is to be contrasted with what may be called *asymmetrical* role interdependence, which would exist if A's role performance only facilitated B's and B's only hindered A's.

[4] A Lewinian orientation is followed in the usage of many of the concepts not defined previously. A *force* is specified by indicating a direction, a magnitude, a point of application, and a source (8).

More precisely, responsibility forces are those forces upon persons growing out of expectations specifying that they perform their roles so that the role performance of others is maximally facilitated and minimally hindered. The second assumption then is as follows:

Assumption 2. *The less the magnitude of forces restraining the locomotion of persons when in interdependence, the greater the strength of responsibility forces upon these persons.*

Let us illustrate briefly what this assumption means. Suppose two persons have a common goal toward which they have been working. Each facilitates the work of the other by doing as much as he can toward the common end. Since the restraints are minimal, each person develops expectations that the others will be maximally facilitative and minimally hindering. Thus each person exerts strong responsibility forces upon the other under these conditions. The forces exerted may take different forms, such as norms regarding the importance of enhancing mutual benefit or agreements to cooperate, and so on.

Hypotheses

The hypotheses tested in this study are formulated below. The first one follows directly from the assumptions.

Hypothesis 1. The greater the facilitation among persons in interdependent roles, the stronger the responsibility forces upon these persons.

The second hypothesis concerns the influence of mutual facilitation upon the speed of locomotion toward the goal. Production, which is a concrete indication of locomotion, should increase with greater mutual facilitation. There are two reasons for this: (*a*) the magnitude of forces restraining locomotion are less with increasing facilitation (Assumption 1), and (*b*) the stronger responsibility felt by persons as a result of increasing facilitation influences them to maximize the speed of locomotion of others (Hypothesis 1). Thus we may state the second hypothesis as follows:

Hypothesis 2. The greater the facilitation among persons in interdependent roles, the greater the speed of locomotion toward the goal for these persons.

Eventually, if a person works rapidly enough, he approaches the limits of his abilities to increase the speed of work. Under conditions of mutual facilitation, we expect that there would be minimal hindrances to locomotion from interdependence, yet there would also be strong motivation to work hard in moving toward the goal (Hypotheses 1 and 2). Hence it would be reasonable to presume that with time a person would either approach or encounter the limits of his capacities. To the degree that this

occurs, the person would be in a state of conflict. If he anticipates working less rapidly, he runs counter to responsibility forces upon him. But if he persists in working harder, he encounters the limits of his abilities.

The state of the person in a conflict between opposing forces we propose to term *emotional tension*. The degree of emotional tension for the person is a function of the magnitude of the weaker of two opposing forces exerted upon the person, when the weaker is greater than a certain magnitude.[5] Although it is difficult to attach very definite intuitive meanings to the concept of emotional tension, it may be identified by two characteristics: (*a*) Its source resides primarily in the opposition of forces exerted upon the person. (*b*) The person's reaction to these conditions is not likely to be goal-directed activity, but rather more expressive behavior such as restlessness, a desire to leave the field, aggressive feelings toward himself and others, and so on.

The relationship between mutual facilitation and emotional tension, then, is proposed in the third hypothesis.

Hypothesis 3. The greater the facilitation among persons in interdependent roles, the greater the emotional tension arising from restraining forces generated by approaching the limits of ability and by fatigue created by the speed of locomotion.

From Hypothesis 3 it is clear that the limits of ability would be reached more rapidly under high mutual facilitation than under low mutual facilitation. Through time therefore the increase in emotional tension would be more rapid when mutual facilitation is high rather than low. A corollary to Hypothesis 3 is as follows:

Corollary to Hypothesis 3. The greater the facilitation among persons in interdependent roles, the greater the increment of emotional tension through time for these persons.

The final effect of mutual facilitation concerns group cohesiveness. The cohesiveness of a group is defined as the resultant of all forces exerted upon members with direction toward the group (9). Many forces undoubtedly affect the member's desire to remain a member of the group. Particularly relevant are those forces which increase the speed of movement for the member toward his own or the group's goals. Since it is proposed that the speed of locomotion is greater with increasing facilitation, we would by the above reasoning expect greater group cohesiveness with increasing mutual facilitation. The last hypothesis is therefore as follows:

Hypothesis 4. The greater the facilitation among persons in interdependent roles, the greater their cohesiveness as a group.

[5] This definition of emotional tension is similar to French's formulation of frustration (6).

These hypotheses state the effects upon group functioning which are of interest here. In summary, it has been hypothesized that increasing mutual facilitation will increase for group members the responsibility forces upon them, their speed of locomotion toward the goal, their emotional tension, and the cohesiveness of the group.

Method

In the experiment, five female subjects sat around a circular table. For thirty minutes the subjects worked on the task of building miniature houses of cardboard. This task was described to them as a test of "General Work Intelligence" in order to maximize motivation to work hard. Speed of work was stressed as the way to get a high score.

Subjects, Setting, and Apparatus

One hundred and sixty volunteer females participated in the experiment. They were a highly homogeneous group in that all were in similar jobs in a large private utility and shared the same social status and conditions of work in the company. The median age was twenty-two. There was wide variation, however, of age, race, and ethnic origin.

At appointed times the participants met in a large room of the company. Each sat evenly spaced from the next around the large circular table. Before each participant were placed her work materials, such as posterboard, scissors, brushes and paint, and sheets of work directions. Beneath the table were buttons wired to a kymograph and a light board. Relevant data were registered on these instruments when a subject pushed her button at appointed times with her right foot. Button-pushing was used to indicate a desire for a relief from work (a measure of emotional tension). Since the equipment was soundless, no one knew how the others used their buttons.

Procedure

Persons were selected for the experiment so that the following conditions were met: each member of each group came from a different work location, and there was one person in each group whose age was thirty-six or older (in order to equalize the influence of maturity through all experimental groups).

At the beginning the participants were told that the purpose of the study was to increase understanding of the effects of work relations upon persons. The task was described as one in which the psychological requirements were similar to the requirements of jobs that the persons

performed every day. Subjects were told that the construction of the miniature house was a test of "General Work Intelligence." This was said in order to make the task meaningful and to maximize motivation to work hard.

During a brief "training" period participants were instructed in how to perform each of the five steps in building the miniature houses. All known ways of maximizing speed and skill were given to the subjects. All were urged, in addition, to refer to the written instructions if necessary. Training ended after each person had completed the first two steps required to build a house.

After this orientation, the "performance" period was introduced. No one was allowed to converse during the experiment. Just before beginning the subjects were told that their score for "General Work Intelligence" depended upon how rapidly they worked. Also, a system of voting for a temporary relief from work was described. At appointed times, persons were told that they could vote by pushing buttons if they wanted a free rest period. A certain number of votes had to come from all members, it was said, before a relief would be allowed. Brief training was given in the use of the foot buttons so that persons could vote without losing time from their work.

The performance period lasted thirty minutes. After ten, twenty, and twenty-five minutes of work, voting periods were called. At each time, the experimenter recorded the number of votes and amount of production for each person. Only after the last vote were participants told that there had been enough votes for a relief. They were then given three minutes of rest, after which they returned to work for five minutes. Following the work session, a questionnaire was completed and a general explanation of the study was given. In no instance were the inductions actually revealed to participants.[6] The entire experiment lasted one hour and forty-five minutes.

Experimental Design and Manipulation of the Variables

Variations of mutual facilitation were obtained by creating high and low facilitation concerning goals (abbreviated HI-GO and LO-GO) and high and low facilitation in means-control (abbreviated HI-MC and LO-MC). The total design included another variable, ego strength, which will not be considered in this report. The total scheme, then, was

[6] Every effort was made to be sure that no negative impressions of the research were developed while conducting the experiment in the company. Evidence available to the author indicates that these efforts were successful in that no incorrect intentions or misleading stereotypes were attributed by operators to the researcher or to the research project.

a 2 × 2 × 2 factorial design of which two treatments are relevant to the present theory. There were forty subjects in each of the four conditions of interest here.

Facilitation in means-control was introduced by the way in which the tasks were assigned to participants. The five steps of the task, in order of performance priority, were 1. tracing the pattern of the house, 2. cutting out the pattern of the house, 3. scoring selected folding parts with a surgeon's knife, 4. gluing the house together, and 5. painting the house. In the condition of low means-control all five of these steps were assigned to each person. Each person performed all steps in making houses, as if they were "craftsmen." Since each person was independent of the next in doing his work, there existed no means-control.

In the condition of high facilitation in means-control, two of the five steps of the task were assigned to each person, as in a "double assembly line." Contiguous persons were mutually dependent in that each had means-control over the performance of the task of the other. That is, persons A and B were interdependent in means-control, as were persons B and C, C and D, and D and E. For each of these pairs of persons, then, there was means-controlling interdependence. The facilitation resided in the ease of performing the tasks. Since each step of the task was very simple to do and the materials of work were kept in good working condition, there was little likelihood that any person would hold up the work of others.

Goal facilitation was varied by instructions to participants concerning how the score on "General Work Intelligence" was computed. All persons were told that the score depended upon the speed in doing steps of the task. But in the condition of low goal facilitation persons were told that they would be scored individually on the basis of the average time required to complete steps of the task from the time steps were begun until they were finished. It was stressed that any person's score was independent of the score of others, since speed of work for each person on a step of the task was independent of the speed of any of the others. Hence, no one person's efforts could either facilitate or hinder the efforts of others to attain the goal. In the condition of high goal facilitation, however, they were told that they would be scored as a group on the basis of the average of individual scores in the group. It was stressed that the speed of each had a proportional effect upon the score assigned to the group as a whole. The movement of each person toward the goal, then, depended upon the speed of work of all others.

The combinations of these four conditions provide us with degrees of mutual facilitation. The order from lowest to highest is as follows: LO-MC, LO-GO; LO-MC, HI-GO; HI-MC, LO-GO; HI-MC, HI-GO. HI-MC was ranked as being more facilitative than HI-GO because the

task was so readily performed that a very high proportion of all acts facilitated others in HI-MC, whereas in HI-GO any one person hypothetically could facilitate others only by one-fifth, since there were five members in each group.

Results

Comparability of Experimental Conditions

With regard to age, previous familiarity, and race it was found that there was sufficient uniformity for none of these factors to account for the results. Subjects uniformly reported high liking for the experimenter and indicated high motivation to work on the task. Also, there were no unique interaction patterns among members of experimental groups that caused variation on dependent variables to be excessively low within experimental groups.[7] Groups in experimental conditions, then, were not sufficiently different regarding these extraneous factors to preclude systematic comparison of conditions.

Success of the Experimental Manipulations

One indication of the success of the inductions is whether the subjects perceived the conditions as the experimenter intended them to be perceived. Using this criterion, it was necessary first to be sure that hindering

TABLE 1

PERCEIVED HINDRANCE AND FACILITATION, BY EXPERIMENTAL CONDITION

EXPERIMENTAL CONDITIONS	MEAN PERCEIVED HINDRANCE (LARGER MEAN, MORE HINDRANCE)	MEAN PERCEIVED FACILITATION (LARGER MEAN, MORE FACILITATION)
HI-MC, HI-GO	1.73	4.25
HI-MC, LO-GO	2.05	4.23
LO-MC, HI-GO	2.25	3.33
LO-MC, LO-GO	1.58	3.56
	$F = 1.59$, p: ns	$F = 7.26$, $p < .01$

interdependence had not been unwittingly created. Table 1 discloses that the amount of hindrance perceived by the subjects did not vary by conditions (F: ns). Moreover, all persons perceived very little hindrance,

[7] Since the independence of responses of subjects was established for all but one of the dependent variables, persons rather than experimental groups were used as the n for statistical tests except in this one case.

if any (point 2 on the scale falls between the points "hindered a little bit" and "not hindered at all"). Having thus ruled out the occurrence of perceived hindrance, we may consider whether the subjects perceived facilitation to be greater when it was intended to have it so. It will be seen in Table 1 that, in general, the amount of facilitation perceived by the participants increased with degrees of facilitation as created experimentally ($F = 7.26$, $p < .01$). The difference between HI-MC and LO-MC is highly significant ($F = 40.96$, $p < .001$) but the effects of goal facilitation alone were not significant. Increasing the degrees of facilitation of means-control among persons caused an increase in the amount of perceived facilitation, but increasing the degrees of goal facilitation among them did not.

It may not be concluded, however, that the variations of goal facilitation did not affect the nature of the subjects' goals. When asked for whom they had worked hardest in trying to get a high score, 90 per cent of those in the conditions of high goal facilitation said that they worked hardest for the group, whereas, in the conditions of low goal facilitation, 73 per cent said that they worked hardest for themselves ($p < .001$ by t-test).

We may conclude, then, that the experimental manipulations were present as intended.

Responsibility Forces

Hypothesis 1 states that the greater the facilitation among persons in interdependent roles, the stronger the responsibility forces upon these persons. Indications of forces on persons to be responsible were secured by asking how disturbed the subject (or others) would be if she (or others) were to perform her role so as to fail to facilitate others. An example of one of the five questions is: "If I worked too slowly, the others would have felt . . ." Responses to the five questions were combined into an index of responsibility forces for each subject.[8] Table 2 shows that the means on the index increase with increasing mutual facilitation. The analysis of variance is summarized in Table 3, where it is seen that the overall F-value is significant ($p < .001$), and the main effects for means-control and goal facilitation are significant ($p < .001$ and $p < .03$ respectively). These findings strongly support Hypothesis 1.

The second source of data bearing upon this hypothesis concerns the subjects' willingness to be helpful to others. Persons were asked how willing they were to be of help to one of the others in the group if that person had had difficulties with his work, and how much they thought they

[8] Responses to the five questions were combined because: (a) the responses to all of the items were highly intercorrelated (rs from +.24 to +.69), and (b) the means for each item increased with increasing degrees of facilitation.

would have lost by helping someone else. Responses to these questions were combined into an index of willingness to be helpful ($r = .41$ between responses on the two scales). Table 4 reveals that the subjects'

TABLE 2

INDEX OF RESPONSIBILITY FORCES BY EXPERIMENTAL CONDITION *
(LARGER MEAN, MORE RESPONSIBILITY)

Degrees of Facilitation in Role Interdependence		Mean of Index of Responsibility Forces
Means-Control	Goal	
High	High	13.79
High	Low	12.79
Low	High	10.61
Low	Low	8.26

* *N* of persons· 152

willingness to be helpful increases with increasing mutual facilitation. Although the overall *F*-test is significant ($p < .05$), there is heterogeneity of variance ($p < .01$ by Cochran's Test). It is improbable, however, that

TABLE 3

SUMMARY OF PARTITIONING OF VARIANCE FOR INDEX OF RESPONSIBILITY FORCES

Source of Variation	Sum of Squares	*df*	*F*	*P*
Means-Control	553.28	1	40.83	<.001
Goal	106.11	1	7.83	<.03
Ego Strength *	5.33	1		ns
Means-Control × Goal	17.11	1		ns
Means-Control × Ego Strength	.05	1		ns
Goal × Ego Strength	35.05	1	2.58	ns
Second-Order Interaction	14.61	1		ns
Total between Means	731.80	7	7.71	<.001
Within Groups	1,951.30	144		
Total Variance	2,683.10	151		
	Cochran's Test: .176	*p*: ns		

* Ego strength, though varied in this study, is not reported here. Subsequent reports will consider its effect upon member behavior in groups.

the heterogeneity would explain entirely the differences among means. Using a modified *t*-test suggested by Edwards (5), the difference between the low and high means (7.38 vs. 8.68) is highly significant ($t = 3.27$, $p < .001$).

Hypothesis 1, then, concerning responsibility forces has been strongly supported.

TABLE 4
WILLINGNESS TO BE HELPFUL, BY EXPERIMENTAL CONDITION *
(LARGER MEAN, MORE WILLINGNESS)

DEGREES OF FACILITATION IN ROLE INTERDEPENDENCE		MEANS OF WILLINGNESS TO BE HELPFUL
Means-Control	Goal	
High	High	8.68
High	Low	8.58
Low	High	7.93
Low	Low	7.38

* N of persons: 160

Speed of Locomotion

Hypothesis 2 states that the greater the facilitation among persons in interdependent roles, the greater the speed of locomotion toward the goal for these persons. The mean number of units produced was used as an indication of the speed of locomotion toward the goal. In the first column of Table 5 it may be seen that the means on production increase

TABLE 5
AMOUNT OF PRODUCTION AND SCORES OF RESULTANT FORCE TOWARD THE GOAL, BY EXPERIMENTAL CONDITION *

DEGREES OF FACILITATION IN ROLE INTERDEPENDENCE		MEAN PRODUCTION UNITS PER GROUP (LARGER MEAN, MORE PRODUCTION)	MEAN SOURCES OF RESULTANT FORCE (LARGER MEAN, LARGE RESULTANT)
Means-Control	Goal		
High	High	77.00	18.67
High	Low	76.63	18.46
Low	High	68.75	17.58
Low	Low	54.88	15.89

* N of groups for production: 32. N of persons for resultant force: 158.

with increasing mutual facilitation. The overall F-value is 3.59 ($p < .04$), and the main effects for means-control provide an F-value of 7.56 ($p < .01$). Though the main effects of goal facilitation are not significant, it is clear from the means in Table 5 that the effects of high goal facilitation alone increase production considerably over the production in the condition of low goal and low means-control facilitation (68.75 vs.

54.88). The difference between these means is highly significant ($t = 6.21$, $p < 001$). These findings provide strong support for Hypothesis 2.

One might argue, however, that the high productivity in the conditions of high means-control was due in part to possible specialization in task performance, and was not due to stronger forces on persons to move more rapidly toward the goal. There are three sources of evidence in support of the contention that motivational factors were responsible for much of the variation of productivity among all conditions. The first concerns findings from an index called the "resultant force." The index of resultant force was constructed from responses to questions concerning pressures perceived by subjects about how hard they should work (symbolized a), the perceived ease of keeping up with others (symbolized b), and the responses included in the index of responsibility forces (c). Components a and c were regarded as driving forces, and b as an indication of potential restraining forces. The score for a person was based upon the following formula:

$$\text{Index of Resultant Force: } a+\frac{c}{2}-b$$

Table 5 reveals the scores on the index of resultant force. As expected theoretically, the resultant force with direction toward the goal increases with increasing mutual facilitation (F for these means is 5.27, $p < .001$).

The second source of evidence is that responsibility forces alone correlated highly with productivity, using group averages on both of these variables ($r = +.51$, $p < .01$). And lastly, the scores on resultant force toward the goal were highly correlated with productivity, using group averages on both variables ($r = +.65$, $p < .01$).[9] These findings strongly support the contention that high productivity was generated by mutual facilitation. If specialization of task played a role in affecting productivity in the conditions of high means-control, it is probable that this influence was minimal relative to the weight of the motivating forces generated by degrees of mutual facilitation.

Emotional Tension

Hypothesis 3 states that the greater the facilitation among persons in interdependent roles, the greater the emotional tension arising from restraining forces generated by approaching the limits of ability and by fatigue created by the speed of locomotion. The first indicator of emo-

[9] Group scores had to be used because, in the conditions of high means-control, only group scores could be obtained on productivity.

tional tension is the frequency of votes for a break from work made by those subjects who indicated that they voted because of tension.[10] Table 6 shows that the means are as predicted only for goal facilitation. The mean for high goal facilitation was 4.60 and for low goal facilitation, 3.19 ($t = 2.39$, $p < .02$). Voting did not vary significantly by variations in means-control. These findings, then, only partially support the hypothesis.

TABLE 6
NUMBER OF VOTES FOR A BREAK, BY EXPERIMENTAL CONDITION

Degrees of Facilitation in Role Interdependence		Mean Votes for Tension Reasons	N *
Means-Control	Goal		
High	High	4.96	27
High	Low	2.95	24
Low	High	4.11	19
Low	Low	3.45	22

* The N is truncated because those voting for reasons other than tension have been excluded.

Additional indicators of emotional tension were obtained from responses to questionnaire items. In order to be more confident that these responses were indicators of emotional tension, and not need tension alone, responses were used of only those persons for whom there was some evidence of opposing forces upon them. In order to make operational the probable existence of opposing forces, those persons were used who experienced some hindering in the experiment.[11] Table 7 shows the means of responses to the four questions concerning emotional tension for these subjects. It is clear from the progression of the means that the greater the mutual facilitation, the greater the anger toward others ($F = 8.66$, $p < .001$). The means progress as predicted for restlessness ($F = 2.10$, $p = .12$) and feeling hemmed in ($F = 1.69$, p: ns), though the p-values indicate greater probability of chance occurrence. The means for self-anger do not progress as predicted (F: ns). Hence Hypothesis 3 is strongly supported in responses to one question, weakly supported in responses to two questions, and not supported in responses to another.

[10] Following the experiment, subjects were asked why they voted, if they did. Responses were coded for indications of tension and only those who indicated reasons of tension were used in this analysis. Intercoder reliability was 95 per cent agreement.

[11] As will be recalled, very little hindering occurred and hence this way of obtaining opposing forces is not entirely adequate, though it was the best available here.

The corollary for Hypothesis 3 states that the increment of emotional tension through time will be greater the greater the facilitation among persons in interdependent roles. Table 8 shows the mean increment of votes through time. The increments increase as predicted, though it is clear that the conditions of high means-control contribute most to the increases. The difference between these conditions of high and low means-control is significant by a one-tailed *t*-test ($p < .05$). Though this evidence is not strong, it does support the corollary.

TABLE 7

VARIOUS INDICATORS OF EMOTIONAL TENSION BY EXPERIMENTAL CONDITION *

DEGREES OF FACILITATION IN ROLE INTERDEPENDENCE		ANGER TOWARD OTHERS	FELT REST-LESSNESS	FEELING HEMMED IN	SELF-ANGER
Means-Control	Goal				
High	High	3.00 †	3.62	3.69	3.69
High	Low	2.45	3.60	3.40	2.95
Low	High	1.87	2.96	3.17	3.43
Low	Low	1.50	2.71	2.78	3.57

* Only subjects who experienced relatively high hindering; *N* is 80.
† For all means, the higher the number, the greater the emotional tension.

TABLE 8

INCREMENT OF EMOTIONAL TENSION (VOTING) AND DECREMENT IN SPEED OF LOCOMOTION (PRODUCTION), BY EXPERIMENTAL CONDITION *

DEGREES OF FACILITATION IN ROLE INTERDEPENDENCE		MEAN UNIT DECREASE IN PRODUCTION (MINUS SIGNIFIES DECREASE)	MEAN INCREMENT OF VOTING (LARGER MEAN, MORE VOTING)
Means-Control	Goal		
High	High	−.375	1.04
High	Low	−1.25	.83
Low	High	−1.75	.42
Low	Low	+1.63	.41

* Voting increment from time one to time three; difference between average production in conditions from time two to time three.

Additional findings bearing upon Hypothesis 3 concern the average decrease in production through time. If it is correct that as mutual facilitation increases, persons approach the limits of ability, then one would expect that the speed of movement would decrease to the degree that these limits are approached. Table 8 shows that in general there is a

greater decrease in production through time with increasing mutual facilitation. From Hypothesis 3, we would predict emotional tension to increase to the degree that these limits are encountered. Table 8 clearly indicates that this is what happened: as the speed of movement (production) decreased, the increment of emotional tension (voting) increased through time (Kendall's *tau* is − .67).[12]

Considering all of the findings as a whole, Hypothesis 3 has been supported. Most of the evidence indicates that the null hypothesis may be rejected.

Group Cohesiveness

Hypothesis 4 states that the greater the facilitation among persons in interdependent roles, the greater the cohesiveness of the group. Attraction to group was made operational by responses to three questions patterned after those used by Schachter (12) and Libo (9). Table 9 indicates that the progression of means for the total sample is not entirely as predicted, nor are the differences significantly different from chance ($F = 1.56$). There was little variation of attraction to the group among conditions. Moreover, on the basis of data from Libo's (9) work, there was high attraction to the group in all conditions of this study.[13] Since not all persons perceived the inductions exactly as intended, a separate analysis was undertaken in order to determine whether the predicted ef-

TABLE 9

ATTRACTION TO GROUP, BY EXPERIMENTAL CONDITION *

Degrees of Facilitation in Role Interdependence		Means of Attraction to Group	
Means-Control	Goal	Total Sample	Subsample
High	High	22.53	23.07
High	Low	21.70	23.00
Low	High	22.33	22.70
Low	Low	20.83	19.16

* N of persons in total sample: 160; N of persons in subsample: 46.

[12] It was not possible to compute this correlation for all individuals, since in only the conditions of low means-control were individual scores available on production. Because variations of both production and voting through time were very small in these conditions of relatively low facilitation, one would not expect the predicted relationship to occur here.

[13] The mean value for high attraction to group in Libo's research was 21.5, and for low attraction, 16.2, using the same questionnaire items as used in this study.

fects would occur for those subjects for whom the experimental inductions were most effective.[14] The means on attraction to group for these subjects are shown in the last column of Table 9. Here the predicted trend of means occurs, though it is clear that only in the condition of LO-GO, LO-MC is the mean of attraction to group appreciably lower than the others (this mean is significantly different from the others by *t*-test at beyond the .03 point).

It will be recalled that it was assumed that forces which increase the speed of movement toward the goal are forces with direction toward the group. In short, groups with higher production, under these experimental conditions, should be more cohesive. This assumption is supported by the correlation of $+.69$ ($p < .01$) between production of the group and the average attraction to the group. This evidence indirectly supports Hypothesis 4.

These findings, then, support Hypothesis 4, though this support is not uniformly strong.

Effects of Hindering in Role Interdependence

A basic assumption in the theory is that role interdependence which is facilitative for persons has different effects than that which is hindering for them. Findings relevant to this assumption were found in this study. Though degrees of facilitation were actually created for subjects, and very little hindering in absolute terms was perceived by them, there were some persons who perceived relatively more hindering than others. These persons, then, were in the psychological situation of being facilitated to some degree by others in most conditions of the experiment, yet perceiving some small degree of hindering. The reactions of these subjects should have been very different from those experiencing no hindering. Table 10 indicates that those experiencing relatively higher hindering were less attracted to the group ($p < .03$), were less willing to be helpful ($p < .001$), and experienced much more emotional tension than did those who experienced less hindering. At the same time, however, there was no difference in means on production and in the scores on the index of responsibility forces between those perceiving high and low hindering. Production would not have been expected to vary because, in all likelihood, there were no *actual* restraints to production other than those of ability. This reason also explains the fact that there were no differences in the means of the index of responsibility forces.

These findings suggest that hindrance—even if only perceived and

[14] Only around one-third of the subjects perceived the inductions as intended on all perceptual criteria combined.

not actual—has effects upon group members which are, in most instances, the opposite of those found to accompany mutual facilitation.

TABLE 10

DIFFERENCES IN REACTIONS OF THOSE PERCEIVING HIGH AND LOW HINDERING IN ROLE INTERDEPENDENCE ON SELECTED DEPENDENT VARIABLES

DEPENDENT VARIABLE	PERCEIVED HINDERING		t	p *
	High (N = 73)	Low (N = 87)		
Attraction to Group	20.98	22.56	2.12	<.03
Willingness to be Helpful	7.59	8.60	3.40	<.001
Production	14.10	14.58	.38	ns
Index of Responsibility Forces	11.82	11.05	1.15	ns
Tension: Angry with Others	2.21	1.72	3.47	<.001
Tension: Restlessness	3.23	2.91	1.66	<.05
Tension: Hemmed In	3.27	2.64	3.53	<.001
Tension: Self-Anger	3.38	3.00	2.04	<.04

* One-tailed test

Discussion

In general the findings indicate that group effectiveness is increased by increasing mutual facilitation. Group members move with greater speed toward the goal, have stronger responsibility forces acting upon them, and are in more cohesive groups when mutual facilitation is high rather than low. The effectiveness is countered, however, by greater emotional tension of the group members when mutual facilitation is high. What apparently occurs, then, is that both group effectiveness and emotional tension rise with increases in mutual facilitation.

We assume, however, that most persons strive simultaneously to move as rapidly as possible toward their goals and to experience the least emotional tension in so doing. In order best to accommodate both of these strivings there is, at least hypothetically, a degree of mutual facilitation of *optimum benefit* for members of the group. That degree of optimum benefit would be the amount of mutual facilitation that maximizes the speed of movement for group members and minimizes emotional tension for them. Above this degree, production would be high but so would emotional tension; below this degree, emotional tension would be low but so would production.

If future research bears out the findings of this study, the concept of optimum benefit would have many practical implications. Persons are frequently involved in cooperative groups in which there exists some mutual facilitation. It is not enough to consider the positive effects upon

group functioning stressed by Deutsch (3) and others. The negative effects due to emotional tension, and other possible side effects, must be evaluated as well. In order to approximate a degree of mutual facilitation that is of optimum benefit in any real situation, it is likely that appropriate empirical methods would have to be used that would reveal that point at which emotional tension becomes too great for comfortable work adjustment. Once this point is established, means-control or goal facilitation could be appropriately modified in order to adjust the degree of mutual facilitation within the range of optimum benefit.

Further research is necessary, however, before the present findings can be generalized. It is not clear, for example, what repercussions of emotional tension would occur if group members were given sufficient opportunity to react to their discomforts. Findings here imply that production would decrease if emotional tension were higher. Whether all the positive effects of increasing facilitation would be negated through time, however, cannot be answered from data in this study. While we surmise that this would not occur, since mutual facilitation seems to be a highly impelling phenomenon, there is every reason to suppose that there are potentially disruptive processes associated with high levels of emotional tension (6). What these are should be investigated further.

In this study the findings indicate that facilitation in means-control is much more effective in modifying group functioning than is facilitation concerning goals. This is what was expected, since means-control produced greater mutual facilitation, by the rough quantitative estimates, than did goal facilitation. Means-control, in fact, was so impelling that even when persons were told to strive for individual goals (as in the condition of HI-MC, LO-GO), most of these persons stated that they strove for *group goals* in the experiment.[15] It is probable that whenever tasks are easily and readily performed, facilitation in means-control will be a more potent determinant of the effects studied here than will goal facilitation.

The reason for this is that facilitation in means-control was viewed as a function of the percentage of facilitative acts of a person among all acts performed by him in means-control with another. Facilitation of goals, on the other hand, was seen as a function of the number of others being facilitated by a person; the fewer the number of others, the greater the potential contribution of any one person to the movement of others. The maximum facilitation in means-control is hypothetically 100 per cent, since *all* acts of one person could be facilitative for the other in means-control. However, the maximum goal facilitation of one person by another, if all have equal ability, cannot exceed one-half, or 50 per cent—as in the case of a two-person group. A person's goal-facilitation potential

[15] Sixty-five per cent of the subjects in this condition stated that they worked harder for the group than for themselves.

can only decrease as group size increases, since his contribution decreases proportionately with the number of others being facilitated. From this reasoning, then, we derive that given easily performed tasks and reasonably equal ability of persons, facilitation in means-control will always result in predictably more potent effects upon group functioning than will goal facilitation.

Two additional derivations follow from this reasoning. If the amount of goal facilitation is indeed a function of group size, there should be greater mutual facilitation in small groups than in larger groups with common team goals. A second derivation concerns the effects of task difficulty upon the degree of mutual facilitation in relations of means-control. If difficult tasks reduce the proportion of facilitative acts, the amount of mutual facilitation in means-control should approximate the difficulty persons have in performing their tasks: the greater the difficulty, the less the degree of mutual facilitation. Since neither size of group nor difficulty of task were varied in this study, only additional work can assess the effects they may have upon mutual facilitation.

Implicit in this study was the supposition that facilitative interdependence has basically different effects from hindering interdependence. In support of this assumption were findings showing that perceived hindrance in most cases produced effects opposite to those of perceived facilitation. One would expect actual, rather than perceived, hindrance to produce even more striking effects upon group functioning. By placing mutual hindrance at the extreme end of the continuum of mutual facilitation, it might be possible to account by means of the present theory for the effects of mutual hindrance. It is probable, however, that some extensions of the present theory would be required in order to predict all of the effects of mutual hindrance.

A final implication of these findings is a caution to experimenters in the selection of tasks for laboratory studies. Tasks requiring interdependence either in the division of labor or in goal attainment are likely, in themselves, to create impelling forces on group members that are entirely different from those created by tasks not requiring interdependence. If interdependence is facilitative, it is probable that the effects found in this study will result. If the interdependence is hindering, the opposite effects are likely to be produced. In selecting tasks, then, experimenters should determine whether there is sufficient interdependence required to have an influence on the expected results of the study.

Summary

Interdependence, created by a division of labor among group members and by setting team goals, was examined in this study. The theoretical question was how to account for the effects upon group functioning

of one characteristic common both to a division of labor and to joint efforts to attain a common goal. In the theory, it was proposed that the important common characteristic is the degree of mutual facilitation among group members in interdependence.

The concept of means-control interdependence was introduced to describe interdependence created by a division of labor. In means-control members facilitate one another by allowing others to perform their tasks successfully. The concept of goal facilitation was proposed to characterize interdependence among members striving toward group or individual goals. Briefly stated, members facilitate one another regarding goals to the degree that the efforts of each actually serve to move all others toward their respective goals. With these concepts and others, assumptions were evolved by which various effects upon group functioning were derived. The hypotheses were that with increasing facilitation among persons in interdependent roles, there would occur for group members: (*a*) stronger responsibility forces, (*b*) greater speed of locomotion toward the goal, (*c*) greater emotional tension arising from restraining forces generated by approaching the limits of ability and by fatigue created by the speed of locomotion, and (*d*) greater group cohesiveness.

An experiment in which 160 female subjects participated, was conducted to test the hypotheses. Participants in groups of 5 constructed miniature houses of cardboard under strong motivation for a period of 30 minutes. In some groups, members were made interdependent by a complex division of labor in constructing parts of the houses. Members in other groups were linked together in interdependence by a common team goal. These conditions were contrasted with others in which members either did not work with a division of labor, or worked toward individual goals. When ordered appropriately, these conditions provide four degrees of mutual facilitation in interdependence.

The findings supported the hypotheses of the study. Furthermore, there was evidence corroborating the assumption that facilitative interdependence produces effects upon group functioning which, in general, are the opposite of those produced by hindering interdependence. The implications of these findings for creating an optimum degree of facilitative interdependence in practical situations was discussed. Certain derivations not tested in this study were suggested as topics for further experimentation.

It is concluded that the theory proposed here has been supported.

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Organizational Goals and Environment: Goal-Setting as an Interaction Process

James D. Thompson and William J. McEwen

In the analysis of complex organizations the definition of organizational goals is commonly utilized as a standard for appraising organizational performance. In many such analyses the goals of the organization are often viewed as a constant. Thus a wide variety of data, such as official documents, work activity records, organizational output, or statements by organizational spokesmen, may provide the basis for the definition of goals. Once this definition has been accomplished, interest in goals as a dynamic aspect or organizational activity frequently ends.

It is possible, however, to view the setting of goals (i.e., major organizational purposes) not as a static element but as a necessary and recurring problem facing any organization, whether it is govermental, military, business, educational, medical, religious, or other type.

This perspective appears appropriate in developing the two major lines of the present analysis. The first of these is to emphasize the interdependence of complex organizations within the larger society and the consequences this has for organizational goal-setting. The second is to emphasize the similarities of goal-setting *processes* in organizations with manifestly different goals. The present analysis is offered to supplement recent studies of organizational operations (2, 5, 6).

It is postulated that goal-setting behavior is *purposive* but not necessarily *rational;* we assume that goals may be determined by accident, i.e., by blundering of members of the organization and, contrariwise, that the most calculated and careful determination of goals may be negated by developments outside the control of organization members. The goal-setting problem as discussed here is essentially determining a relationship

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of the organization to the larger society, which in turn becomes a question of what the society (or elements within it) wants done or can be persuaded to support.

Goals as Dynamic Variables

Because the setting of goals is essentially a problem of defining desired relationships between an organization and its environment, change in either requires review and perhaps alteration of goals. Even where the most abstract statement of goals remains constant, application requires redefinition or interpretation as changes occur in the organization, the environment, or both.

The corporation, for example, faces changing markets and develops staff specialists with responsibility for continuous study and projection of market changes and product appeal. The governmental agency, its legislative mandate notwithstanding, has need to reformulate or reinterpret its goals as other agencies are created and dissolved, as the population changes, or as non-governmental organizations appear to do the same job or to compete. The school and the university may have unchanging abstract goals but the clientele, the needs of pupils or students, and the techniques of teaching change and bring with them redefinition and reinterpretation of those objectives. The hospital has been faced with problems requiring an expansion of goals to include consideration of preventive medicine, public health practices, and the degree to which the hospital should extend its activities out into the community. The mental hospital and the prison are changing their objectives from primary emphasis on custody to a stress on therapy. Even the church alters its pragmatic objectives as changes in the society call for new forms of social ethics, and as government and organized philanthropy take over some of the activities formerly left to organized religion. Pertinent studies of various organizational types are available in the following references (3, 4, 7, 12, 14).

Reappraisal of goals thus appears to be a recurrent problem for large organization, albeit a more constant problem in an unstable environment than in a stable one. Reappraisal of goals likewise appears to be more difficult as the "product" of the enterprise becomes less tangible and more difficult to measure objectively. The manufacturing firm has a relatively ready index of the acceptability of its product in sales figures; while poor sales may indicate inferior quality rather than public distaste for the commodity itself, sales totals frequently are supplemented by trade association statistics indicating the firm's "share of the market." Thus within a matter of weeks, a manufacturing firm may be able to

reappraise its decision to enter the "widget" market and may therefore begin deciding how it can get out of that market with the least cost.

The governmental enterprise may have similar indicators of the acceptability of its goals if it is involved in producing an item such as electricity, but where its activity is oriented to a less tangible purpose such as maintaining favorable relations with foreign nations, the indices of effective operation are likely to be less precise and the vagaries more numerous. The degree to which a government satisfies its clientele may be reflected periodically in elections, but despite the claims of party officials, it seldom is clear just what the mandate of the people is with reference to any particular governmental enterprise. In addition, the public is not always steadfast in its mandate.

The university perhaps has even greater difficulties in evaluating its environmental situation through response to its output. Its range of "products" is enormous, extending from astronomers to zoologists. The test of a competent specialist is not always standardized and may be changing, and the university's success in turning out "educated" people is judged by many and often conflicting standards. The university's product is in process for four or more years and when it is placed on the "market" it can be only imperfectly judged. Vocational placement statistics may give some indication of the university's success in its objectives, but initial placement is no guarantee of performance at a later date. Furthermore, performance in an occupation is only one of several abilities that the university is supposed to produce in its students. Finally, any particular department of the university may find that its reputation lags far behind its performance. A "good" department may work for years before its reputation becomes "good" and a downhill department may coast for several years before the fact is realized by the professional world.

In sum, the goals of an organization, which determine the kinds of goods or services it produces and offers to the environment, often are subject to peculiar difficulties of reappraisal. Where the purpose calls for an easily identified, readily measured product, reappraisal and readjustment of goals may be accomplished rapidly. But as goals call for increasingly intangible, difficult-to-measure products, society finds it more difficult to determine and reflect its acceptability of that product, and the signals that indicate unacceptable goals are less effective and perhaps longer in coming.

Environmental Controls Over Goals

A continuing situation of necessary interaction between an organization and its environment introduces an element of environmental control into the organization. While the motives of personnel, including goal-

setting officers, may be profits, prestige, votes, or the salvation of souls, their efforts must produce something useful or acceptable to at least a part of the organizational environment to win continued support.[1]

In the simpler society social control over productive activities may be exercised rather informally and directly through such means as gossip and ridicule. As a society becomes more complex and its productive activities more deliberately organized, social controls are increasingly exercised through such formal devices as contracts, legal codes, and governmental regulations. The stability of expectations provided by these devices is arrived at through interaction, and often through the exercise of power in interaction.

It is possible to conceive of a continuum of organizational power in environmental relations, ranging from the organization that dominates its environmental relations to one completely dominated by its environment. Few organizations approach either extreme. Certain gigantic industrial enterprises, such as the *Zaibatsu* in Japan or the old Standard Oil Trust in America, have approached the dominance-over-environment position at one time, but this position eventually brought about "countervailing powers." Perhaps the nearest approximation to the completely powerless organization is the commuter transit system, which may be unable to cover its costs but nevertheless is regarded as a necessary utility and cannot get permission to quit business. Most complex organizations, falling somewhere between the extremes of the power continuum, must adopt strategies for coming to terms with their environments. This is not to imply that such strategies are necessarily chosen by rational or deliberate processes. An organization can survive so long as it adjusts to its situation; whether the process of adjustment is awkward or nimble becomes important in determining the organization's degree of prosperity.

However arrived at, strategies for dealing with the organizational environment may be broadly classified as either *competitive* or *co-operative.* Both appear to be important in a complex society—of the "free enterprise" type or other. Both provide a measure of environmental control over organizations by providing for "outsiders" to enter into or limit organizational decision process.

The decision process may be viewed as a series of activities, conscious or not, culminating in a choice among alternatives. For purposes of this paper we view the decision-making process as consisting of the following activities (10):

[1] This statement would seem to exclude antisocial organizations, such as crime syndicates. A detailed analysis of such organizations would be useful for many purposes; meanwhile it would appear necessary for them to acquire a clientele, suppliers, and others, in spite of the fact that their methods may at times be somewhat unique.

1. Recognizing an occasion for decision, i.e., a need or an opportunity.
2. Analysis of the existing situation.
3. Identification of alternative courses of action.
4. Assessment of the probable consequences of each alternative.
5. Choice from among alternatives.

The following discussion suggests that the potential power of an outsider increases the earlier he enters into the decision process, and that competition and three sub-types of co-operative strategy—*bargaining, co-optation,* and *coalition*—differ in this respect. It is therefore possible to order these forms of interaction in terms of the degree to which they provide for environmental control over organizational goal-setting decisions.

Competition. The term competition implies an element of rivalry. For present purposes competition refers to that form of rivalry between two or more organizations which is mediated by a third party. In the case of the manufacturing firm the third party may be the customer, the supplier, the potential or present member of the labor force, or others. In the case of the governmental bureau, the third party through whom competition takes place may be the legislative committee, the budget bureau, or the chief executive, as well as potential clientele and potential members of the bureau.

The complexity of competition in a heterogeneous society is much greater than customary usage (with economic overtones) often suggests. Society judges the enterprise not only by the finished product but also in terms of the desirability of applying resources to that purpose. Even the organization that enjoys a product monopoly must compete for society's support. From the society it must obtain resources—personnel, finances, and materials—as well as customers or clientele. In the business sphere of a "free enterprise" economy this competition for resources and customers usually takes place in the market, but in times of crisis the society may exercise more direct controls, such as rationing or the establishment of priorities during a war. The monopoly competes with enterprises having different purposes or goals but using similar raw materials; it competes with many other enterprises, for human skills and loyalties, and it competes with many other activities for support in the money markets.

The university, customarily a non-profit organization, competes as eagerly as any business firm, although perhaps more subtly (1, 16). Virtually every university seeks, if not more students, better-qualified students. Publicly supported universities compete at annual budget sessions with other governmental enterprises for shares in tax revenues. Endowed universities must compete for gifts and bequests, not only with other universities but also with museums, charities, zoos, and similar non-profit enterprises. The American university is only one of many organizations

competing for foundation support, and it competes with other universities and with other types of organizations for faculty.

The public school system, perhaps one of our most pervasive forms of near-monopoly, not only competes with other governmental units for funds and with different types of organizations for teachers, but current programs espoused by professional educators often compete in a very real way with a public conception of the nature of education, e.g., as the three R's, devoid of "frills."

The hospital may compete with the midwife, the faith-healer, the "quack" and the patent-medicine manufacturer, as well as with neighboring hospitals, despite the fact that general hospitals do not "advertise" and are not usually recognized as competitive.

Competition is thus a complicated network of relationships. It includes scrambling for resources as well as for customers or clients, and in a complex society it includes rivalry for potential members and their loyalties. In each case a third party makes a choice among alternatives, two or more organizations attempt to influence that choice through some type of "appeal" or offering, and choice by the third party is a "vote" of support for one of the competing organizations and a denial of support to the others involved.

Competition, then, is one process whereby the organization's choice of goals is partially controlled by the environment. It tends to prevent unilateral or arbitrary choice of organizational goals, or to correct such a choice if one is made. Competition for society's support is an important means of eliminating not only inefficient organizations but also those that seek to provide goods or services the environment is not willing to accept.

Bargaining. The term bargaining, as used here, refers to the negotiation of an agreement for the exchange of goods or services between two or more organizations. Even where fairly stable and dependable expectations have been built up with important elements of the organizational environment—with suppliers, distributors, legislators, workers and so on—the organization cannot assume that these relationships will continue. Periodic review of these relationships must be accomplished, and an important means for this is bargaining, whereby each organization, through negotiation, arrives at a decision about future behavior satisfactory to the others involved.

The need for periodic adjustment of relationships is demonstrated most dramatically in collective bargaining between labor and industrial management, in which the bases for continued support by organization members are reviewed. But bargaining occurs in other important, if less dramatic, areas of organizational endeavor. The business firm must bargain with its agents or distributors, and while this may appear at times to be one-sided and hence not much of a bargain, still even a long-standing

agency agreement may be severed by competitive offers unless the agent's level of satisfaction is maintained through periodic review (13). Where suppliers are required to install new equipment to handle the peculiar demands of an organization, bargaining between the two is not unusual.

The university likewise must bargain (16). It may compete for free or unrestricted funds, but often it must compromise that ideal by bargaining away the name of a building or of a library collection, or by the conferring of an honorary degree. Graduate students and faculty members may be given financial or other concessions through bargaining, in order to prevent their loss to other institutions.

The governmental organization may also find bargaining expedient (8). The police department, for example, may overlook certain violations of statutes in order to gain the support of minor violators who have channels of information not otherwise open to department members. Concessions to those who "turn state's evidence" are not unusual. Similarly a department of state may forego or postpone recognition of a foreign power in order to gain support for other aspects of its policy, and a governmental agency may relinquish certain activities in order to gain budget bureau approval of more important goals.

While bargaining may focus on resources rather than explicitly on goals, the fact remains that it is improbable that a goal can be effective unless it is at least partially implemented. To the extent that bargaining sets limits on the amount of resources available or the ways they may be employed, it effectively sets limits on choice of goals. Hence bargaining, like competition, results in environmental control over organizational goals and reduces the probability of arbitrary, unilateral goal-setting.

Unlike competition, however, bargaining involves direct interaction with other organizations in the environment, rather than with a third party. Bargaining appears, therefore, to invade the actual decision process. To the extent that the second party's support is necessary he is in a position to exercise a veto over final choice of alternative goals, and hence takes part in the decision.

Co-optation. Co-optation has been defined as the process of absorbing new elements into the leadership or policy-determining structure of an organization as a means of averting threats to its stability or existence (15). Co-optation makes still further inroads on the process of deciding goals; not only must the final choice be acceptable to the co-opted party or organization, but to the extent that co-optation is effective it places the representative of an "outsider" in a position to determine the occasion for a goal decision, to participate in analyzing the existing situation, to suggest alternatives, and to take part in the deliberation of consequences.

The term co-optation has only recently been given currency in this country, but the phenomenon it describes is neither new nor unimpor-

tant. The acceptance on a corporation's board of directors of representatives of banks or other financial institutions is a time-honored custom among firms that have large financial obligations or that may in the future want access to financial resources. The state university may find it expedient (if not mandatory) to place legislators on its board of trustees, and the endowed college may find that whereas the honorary degree brings forth a token gift, membership on the board may result in a more substantial bequest. The local medical society often plays a decisive role in hospital goal-setting, since the support of professional medical practitioners is urgently necessary for the hospital.

From the standpoint of society, however, co-optation is more than an expediency. By giving a potential supporter a position of power and often of responsibility in the organization, the organization gains his awareness and understanding of the problems it faces. A business advisory council may be an effective educational device for a government, and a White House conference on education may mobilize "grass roots" support in a thousand localities, both by focussing attention on the problem area and by giving key people a sense of participation in goal deliberation.

Moreover, by providing overlapping memberships, co-optation is an important social device for increasing the likelihood that organizations related to one another in complicated ways will in fact find compatible goals. By thus reducing the possibilities of antithetical actions by two or more organizations, co-optation aids in the integration of the heterogeneous parts of a complex society. By the same token, co-optation further limits the opportunity for one organization to choose its goals arbitrarily or unilaterally.

Coalition. As used here, the term coalition refers to a combination of two or more organizations for a common purpose. Coalition appears to be the ultimate or extreme form of environmental conditioning of organizational goals.[2] A coalition may be unstable, but to the extent that it is operative, two or more organizations act as one with respect to certain goals. Coalition is a means widely used when two or more enterprises wish to pursue a goal calling for more support, especially for more resources, than any one of them is able to marshall unaided. American business firms frequently resort to coalition for purposes of research or product promotion and for the construction of such gigantic facilities as dams or atomic reactors.

[2] Coalition may involve joint action toward only limited aspects of the goals of each member. It may involve the complete commitment of each member for a specific period of time or indefinitely. In either case the ultimate power to withdraw is retained by the members. We thus distinguish coalition from merger, in which two or more organizations are fused permanently. In merger one or all of the original parts may lose their identity. Goal-setting in such a situation, of course, is no longer subject to interorganizational constraints among their components.

Coalition is not uncommon among educational organizations. Universities have established joint operations in such areas as nuclear research, archaeological research, and even social science research. Many smaller colleges have banded together for fund-raising purposes. The consolidation of public school districts is another form of coalition (if not merger), and the fact that it does represent a sharing or "invasion" of goal-setting power is reflected in some of the bitter resistance to consolidation in tradition-oriented localities.

Coalition requires a commitment for joint decision of future activities and thus places limits on unilateral or arbitrary decisions. Furthermore, inability of an organization to find partners in a coalition venture automatically prevents pursuit of that objective, and is therefore also a form of social control. If the collective judgment is that a proposal is unworkable, a possible disaster may be escaped and unproductive allocation of resources avoided.

Development of Environmental Support

Environmental control is not a one-way process limited to consequences for the organization of action in its environment. Those subject to control are also part of the larger society and hence are also agents of social control. The enterprise that competes is not only influenced in its goal-setting by what the competitor and the third party may do, but also exerts influence over both. Bargaining likewise is a form of mutual, two-way influence; co-optation affects the co-opted as well as the co-opting party; and coalition clearly sets limits on both parties.

Goals appear to grow out of interaction, both within the organization and between the organization and its environment. While every enterprise must find sufficient support for its goals, it may wield initiative in this. The difference between effective and ineffective organizations may well lie in the initiative exercised by those in the organization who are responsible for goal-setting.

The ability of an administrator to win support for an objective may be as vital as his ability to foresee the utility of a new idea. And his role as a "seller" of ideas may be as important to society as to his organization, for as society becomes increasingly specialized and heterogeneous, the importance of new objectives may be more readily seen by specialized segments than by the general society. It was not public clamor that originated revisions in public school curricula and training methods; the impetus came largely from professional specialists in or on the periphery of education (11). The shift in focus from custody to therapy in mental hospitals derives largely from the urgings of professionals, and the same can be said of our prisons (9). In both cases the public anger, aroused by

crusaders and muck-rakers, might have been soothed by more humane methods of custody. Current attempts to revitalize the liberal arts curricula of our colleges, universities, and technical institutes have developed more in response to the activities of professional specialists than from public urging. Commercial aviation, likewise, was "sold" the hard way, with support being based on subsidy for a considerable period before the importance of such transportation was apparent to the larger public.

In each of these examples the goal-setters saw their ideas become widely accepted only after strenuous efforts to win support through education of important elements of the environment. Present currents in some medical quarters to shift emphasis from treatment of the sick to maintenance of health through preventive medicine and public health programs likewise have to be "sold" to a society schooled in an older concept.

The activities involved in winning support for organizational goals thus are not confined to communication within the organization, however important this is. The need to justify organization goals, to explain the social functions of the organization, is seen daily in all types of "public relations" activities, ranging from luncheon club speeches to house organs. It is part of an educational requirement in a complicated society where devious interdependence hides many of the functions of organized, specialized activities.

Goal-Setting and Strategy

We have suggested that it is improbable that an organization can continue indefinitely if its goals are formulated arbitrarily, without cognizance of its relations to the environment. One of the requirements for survival appears to be ability to learn about the environment accurately enough and quickly enough to permit organizational adjustments in time to avoid extinction. In a more positive vein, it becomes important for an organization to judge the amount and sources of support that can be mobilized for a goal, and to arrive at a strategy for their mobilization.

Competition, bargaining, co-optation, and coalition constitute procedures for gaining support from the organizational environment; the selection of one or more of these is a strategic problem. It is here that the element of rationality appears to become exceedingly important, for in the order treated above, these relational processes represent increasingly "costly" methods of gaining support in terms of decision-making power. The organization that adopts a strategy of competition when co-optation is called for may lose all opportunity to realize its goals, or may finally turn to co-optation or coalition at a higher "cost" than would have been necessary originally. On the other hand, an organization may lose part of

its integrity, and therefore some of its potentiality, if it unnecessarily shares power in exchange for support. Hence the establishment *in the appropriate form* of interaction with the many relevant parts of its environment can be a major organizational consideration in a complex society.

This means, in effect, that the organization must be able to estimate the position of other relevant organizations and their willingness to enter into or alter relationships. Often, too, these matters must be determined or estimated without revealing one's own weaknesses, or even one's ultimate strength. It is necessary or advantageous, in other words, to have the consent or acquiescence of the other party, if a new relationship is to be established or an existing relationship altered. For this purpose organizational administrators often engage in what might be termed a *sounding out process.*

The sounding out process can be illustrated by the problem of the boss with amorous designs on his secretary in an organization that taboos such relations. He must find some means of determining her willingness to alter the relationship, but he must do so without risking rebuff, for a showdown might come at the cost of his dignity or his office reputation, at the cost of losing her secretarial services, or in the extreme case at the cost of losing his own position. The "sophisticated" procedure is to create an ambiguous situation in which the secretary is forced to respond in one of two ways: (*a*) to ignore or tactfully counter, thereby clearly channeling the relationship back into an already existing pattern, or (*b*) to respond in a similarly ambiguous vein (if not in a positive one) indicating a receptiveness to further advances. It is important in the sounding out process that the situation be ambiguous for two reasons: (*a*) the secretary must not be able to "pin down" the boss with evidence if she rejects the idea, and (*b*) the situation must be far enough removed from normal to be noticeable to the secretary. The ambiguity of sounding out has the further advantage to the participants that neither party alone is clearly responsible for initiating the change.

The situation described above illustrates a process that seems to explain many organizational as well as personal inter-action situations. In moving from one relationship to another between two or more organizations it is often necessary to leave a well defined situation and proceed through a period of deliberate ambiguity, to arrive at a new clear-cut relationship. In interaction over goal-setting problems, sounding out sometimes is done through a form of double-talk, wherein the parties refer to "hypothetical" enterprises and "hypothetical" situations, or in "diplomatic" language, which often serves the same purpose. In other cases, and perhaps more frequently, sounding out is done through the good offices of a third party. This occurs, apparently, where there has

been no relationship in the past, or at the stage of negotiations where the parties have indicated intentions but are not willing to state their positions frankly. Here it becomes useful at times to find a discrete go-between who can be trusted with full information and who will seek an arrangement suitable to both parties.

Conclusion

In the complex modern society desired goals often require complex organizations. At the same time the desirability of goals and the appropriate division of labor among large organizations is less self-evident than in simpler, more homogeneous society. Purpose becomes a question to be decided rather than an obvious matter.

To the extent that behavior of organization members is oriented to questions of goals or purposes, a science of organization must attempt to understand and explain that behavior. We have suggested one classification scheme, based on decision-making, as potentially useful in analyzing organizational-environmental interaction with respect to goal-setting and we have attempted to illustrate some aspects of its utility. It is hoped that the suggested scheme encompasses questions of rationality or irrationality without presuming either.

Argument by example, however, is at best only a starting point for scientific understanding and for the collection of evidence. Two factors make organizational goal-setting in a complex society a "big" research topic: the multiplicity of large organizations of diverse type and the necessity of studying them in diachronic perspective. We hope that our discussion will encourage critical thinking and the sharing of observations about the subject.

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Part Five

LEADERSHIP AND GROUP PERFORMANCE

25
Leadership and Group Performance: Introduction

Of all the topics studied by those interested in group dynamics, the nature of leadership and the causes of group performance have been investigated most persistently over a long period of time. And yet these two interrelated problems have been most resistant to solution. From the beginning it has been assumed that morale, group effectiveness, and leadership are all intimately related to one another. But as more and more research has been completed it has become increasingly clear that the relations among these different aspects of group life are exceedingly complex. As is so often true, the accumulation of facts has revealed that simple formulations are inadequate. The belief that a high level of group effectiveness can be achieved simply by the provision of "good" leaders, though still prevalent among many people concerned with the management of groups, now appears naive in the light of research findings.

In spite of the complexity of the relations between them, however, there is still good reason to consider the topics of leadership and group performance together. The nature of a group's leadership clearly "makes a difference" to many aspects of its functioning. The early work on leadership by Lewin, Lippitt, and White (reported in Chap. 28) provided striking evidence that the same group of people will behave in markedly different ways when operating under leaders who behave differently.

Subsequent research has served to support and document this general conclusion. Thus, for example, Kahn and Katz (Chap. 29) have summarized the findings from several studies which obtained data concerning the performance of a variety of workgroups and the characteristic behaviors of each group's supervisor. They conclude: (*a*) supervisors of more effective groups were better able to play a differentiated role than the supervisors of the less effective groups, they spent more time in planning what was to be done, in providing necessary materials, and in initiating next steps; (*b*) the better supervisors delegated authority to others more than the poorer supervisors; (*c*) the more effective supervisors checked up on the subordinates less often and were more supportive in their manner than the less effective ones; and (*d*) the supervisors of

groups with better performance developed cohesiveness among their associates more than did the supervisors of poorer groups.

The intimate relation between leadership and group effectiveness has also been emphasized by Likert (29). On the basis of extensive research he concludes that the effective supervisor "creates a good working team which has a friendly cooperative atmosphere with high group loyalty. He seems to build this high group loyalty through using participation and other recognized methods of group leadership. Moreover, the workgroup under his leadership exercises influence upward upon organizational objectives, methods, etc., and in turn accepts as group goals those objectives which must be achieved if the group is to do its part of the total task of the organization effectively and at a high level of performance. The workgroup sets specific goals and checks its progress toward goals regularly."

Employing a rather different approach, Fiedler (Chap. 31) has shown that the leaders of more effective groups, when asked to evaluate other people, give responses indicating that they characteristically maintain a greater "psychological distance" between themselves and other people than do leaders of less effective groups. Although he also finds that the particular nature of the group affects the ways in which effective leadership is exercised, he is able to demonstrate that his conclusions apply to such diverse groups as basketball teams, workgroups in a steel mill, and the management of cooperatives.

From investigations like these a great many facts about the relations between leadership and group performance have been obtained. Attempts, however, to bring these all together into a coherent theoretical treatment have encountered certain basic difficulties. First, theoretical discussions of the nature of leadership have tended to confuse assumptions about what leadership "ought to be" with research oriented questions of "what produces what." It has been only in recent years that research on leadership has been concerned with cause-and-effect relations regardless of their immediately practical or ideological significance. Even today much of the research is designed to provide empirical support for some particular ideological point of view. While it is true that such research can be of great value, the social scientist whose primary motivation is to defend an ideology will almost certainly develop "blind spots" which prevent his seeing all the relevant facts.

A second problem consists of choosing an acceptable definition of the terms *leader* and *leadership*. To some, leadership is a property of a group while to others it is a characteristic of an individual. To those who emphasize the group, leadership may be synonymous with prestige, with the holding of a particular office, with the performance of activities important to the group, or with an emotional relationship between the leader

and the group. To those who stress the individual, leadership may mean the possession of certain personality characteristics such as dominance, ego-control, aggressiveness, or freedom from paranoid tendencies. The variety of notions contained in these alternative conceptions makes it plain that a single meaning for the term, leader, which would be acceptable to all those interested in leadership cannot readily be chosen. For a discussion of the major approaches to the study of leadership reference should be made to the comprehensive review of the literature prepared by Gibb (15).

Similar problems arise in discussions of group performance. Questions about the determinants of group performance are easily confounded with assumptions about how groups should perform. But it is clear that values can seldom be set aside entirely, because any evaluation of the quality of group performance demands some judgment about desirable states of the group. In considering the nature of group performance and in conducting research on it, one must employ some criteria, such as efficient group locomotion, rewards, costs, errors, satisfaction to members, viability of the group, or quality of interpersonal relations.

In view of the many values that may be invoked in evaluating groups, it should not be surprising to discover that group performance, like leadership, has been defined in different ways by different authors. To some, performance refers to the output of the group; to others, it designates the efficiency of group operations; and to still others, it refers to the motivational or emotional returns to the members of the group. The rather comprehensive definition of organizational effectiveness advanced by Georgopoulous and Tannenbaum (16) indicates how complex the notion of group performance must be. They define organizational effectiveness as "the extent to which an organization as a social system, given certain resources and means, fulfills its objectives without incapacitating its means and resources and without placing undue strain upon its members." Although the task of conceptualization would undoubtedly be simpler if it were possible to define group performance in terms of a single criterion, it is clear that several must be considered together in research and theorizing.

The Traits of Leaders

The earliest approach to research on leadership was concerned with identifying the characteristics of leaders. Many studies were undertaken to determine the physical, intellectual, or personality traits of the leader (usually the person holding an "office") as compared to the follower. It has been reported, for example, that leaders tend to be bigger (but not too much bigger) and brighter (but not too much brighter) than the

rest of the members. Evidence has been found that well accepted leaders tend to display better adjustment on various personality tests. Other studies have concentrated more upon the leader's skills or what he does than upon the nature of his deeper personality. Findings from such studies indicate, for example, that leaders tend to give more information, ask for more information, and make more frequent interpretations about the situation than do the rest of the members.

On the basis of ideas and findings about the traits and behaviors of leaders, various attempts have been made to develop techniques for identifying persons who have the qualities seen as important for leadership. Many different selection procedures have been invented, ranging from paper-and-pencil tests to performance tests under lifelike conditions. The usefulness of all this work depends, of course, upon establishing some agreement about the nature of "good" leadership. Values must enter at this point. Among the values more commonly invoked in determining criteria of "good" leadership are high morale, high productivity, popularity, equalitarianism, and authoritarianism. In regard to such matters as popularity, group morale and productivity it has been possible to obtain quantitative measures and to demonstrate that certain kinds of leader behavior produce more of these valued properties than do others.

On the whole, however, the attempt to discover the traits that distinguish leaders from nonleaders has been disappointing. Bird (4) made an extensive examination of the research relevant to this problem conducted prior to 1940 and was able to compile a long list of traits which in one or more studies appeared to differentiate leaders from nonleaders. The discouraging fact, however, was that only about 5% of the "discovered" traits were common to four or more investigations. A more recent survey of the literature by Stogdill (42) produced only slightly more encouraging conclusions. He reports that various studies of the traits of leadership continue to result in contradictory findings. Among these studies the only conclusion that receives even fairly good support is that leaders excel nonleaders in intelligence, scholarship, dependability and responsibility, activity and social participation, and socioeconomic status. A good summary of the inadequacies of the trait approach has been provided by Gouldner (18, 23–45).

One major reason for the disappointing outcome of this approach may be that personality traits are still poorly conceived and unreliably measured. As our knowledge about the nature of personality improves and as our techniques of measurement become more dependable, it is possible that traits will be discovered which do regularly distinguish leaders from followers. It must be noted, however, that although this is a possibility which cannot be definitely rejected, the available evidence does not make it appear very probable. Fiedler (Chap. 31) suggests that another diffi-

culty may be involved. He points out that the characteristics which get a person into a position of leadership may be rather different from those which make a person an effective leader once he has attained an office of leadership. It may well be, as he argues, that the study of traits of *leadership effectiveness* will reveal a greater consistency of results than has been found from comparing leaders and nonleaders.

On the whole, investigators in this field are coming to the conclusion that, while certain minimal abilities are required of all leaders, these are also widely distributed among nonleaders as well. Furthermore, the traits of the leader which are necessary and effective in one group or situation may be quite different from those of another leader in a different setting. This conclusion, if adequately substantiated, would imply that the selection of leaders must consider a man's suitability for the type of functions he is to perform in a given situation and it would raise questions about the desirability of formal arrangements which maintain the responsibilities of leadership in the same person regardless of the changing task of the group and the changing requirements upon leaders.

Research on the training of leaders also suggests that a more "situational" approach to leadership is required. There is a growing recognition that little improvement in actual leadership behavior can be expected from providing people with a set of "rules of leadership." And even when efforts have been made to instill "flexibility," "sensitivity," or "good attitudes toward people," the resulting changes in behavior have been disappointing. Impressive documentation of these difficulties has been provided by Fleishmann, Harris, and Burtt (10) in their evaluation of a foreman training program. They found marked improvement in the attitudes and skills of leaders immediately after participation in an intensive training program. Within a few months, however, the foremen had reverted to their pretraining modes of behavior. These investigators attribute this "regression" to the nature of the organization in which the foremen worked. Specifically, they show that there was often a discrepancy between the behavior taught in the program and the behavior expected by the foreman's supervisor. They conclude (10, 58) that "when what is taught in the School is at variance with what is practiced in the plant, the latter is generally the more powerful influence." Lippitt (31) was concerned with essentially the same problem when he designed an experimental training program for people working in the field of intergroup relations. He reasoned that if people were trained as members of teams they could more effectively resist "on the job" regressive pressures by giving support to one another in their post-training activities. The results of this experiment, in which some people were trained as team members while others were trained as individuals, show that those trained as teams were in fact better able to put into practice and to main-

tain new leadership practices than the persons who were trained as individuals.

In summary, we may conclude that the conception of leaders as people who possess certain distinctive traits has not proved to be satisfactory. A "new view" of leadership is emerging which stresses the performance of needed functions and adaptability to changing situations. According to this conception, groups are (or should be) flexible in assigning leadership functions to various members as conditions change. Effective leaders are sensitive to the changing conditions of their groups and flexible in adapting their behavior to new requirements. The improvement of leadership may be expected, not from improving leaders apart from the group, but by modifying the relations between leaders and the rest of the group.

Leadership and Group Functions

Dissatisfaction with the trait approach has, then, given rise to a view of leadership which stresses the characteristics of the group and the situation in which it exists. Research conducted within this orientation does not attempt to find certain invariant traits of leaders. Rather, it seeks to discover what actions are required by groups under various conditions if they are to achieve their goals or other valued states, and how different group members take part in these group actions. Leadership is viewed as the performance of those acts which help the group achieve its preferred outcomes. Such acts may be termed *group functions.* More specifically, leadership consists of such actions by group members as those which aid in setting group goals, moving the group toward its goals, improving the quality of the interactions among the members, building the cohesiveness of the group, or making resources available to the group. In principle, leadership may be performed by one or many members of the group.

This point of view has been stressed by many writers including Barnard (2), Cattell (7), French (13), Gibb (14), Likert (28), Lippitt (30), Redl (37), and Stogdill (43). The common denominator among these theorists includes the following points: Groups differ from one another in a variety of ways, and the actions required for the achievement of valued states of one group may be quite different from those of another. The nature of leadership and the traits of leaders will accordingly be different from group to group. Situational aspects such as the nature of the group's goals, the structure of the group, the attitudes or needs of the members, and the expectations placed upon the group by its external environment, help to determine which group functions will be needed at any given time and who among the members will perform them. Expla-

nations of both leadership and performance can be approached, therefore, by the use of the same terms.

What Are Leadership Functions?

Nearly every conception of leadership contains the notion that a true leader exerts more influence on the group and its activities than does the average member. There is less clear-cut agreement, however, concerning the specific kinds of influence which are uniquely those of leadership. Cattell (7) has proposed what is perhaps the most inclusive conception when he asserts that any member of a group exerts leadership to the extent that the properties of the group (syntality) are modified by his presence in the group.[1] According to this view all group functions (i.e., all member actions which help the group achieve its desired states) are leadership functions. Although this conception is much broader than most popular notions of leadership, it has distinct theoretical advantages. One of the most important of these is that leadership and group performance are conceived as necessarily related to each other. In identifying acts of leadership, the researcher has first to determine what states are valued for the group at a given time, then to discover which functions are appropriate for the attainment of these states, and finally to determine which actions by members of the group contribute to the function. Acts of leadership, thus, will contribute to the attainment of such things as goal achievement, viability of the group, satisfactory human relations, satisfaction of members, minimum cost to members, and the like—in short, to group performance. Another advantage is that leadership is viewed as a quantity which a person may display in varying degree rather than something that he either has completely or does not have at all. Similarly, leadership may be possessed to some degree by any member of the group regardless of his formally designated office or position. In keeping with this definition of leadership it would be rare indeed that one could properly speak of "the leader" of a group.

Some theorists prefer to stay closer to the popular notion of leadership and to restrict the term so as to include the performance of a more limited set of group functions, such as those of planning, decision-making, or coordinating. This approach maintains the essentially functional conception of leadership, but it uses the word *leadership* to refer to a special class of functions. Krech and Crutchfield (25, 417–422) have listed 14

[1] Cattell includes both positive and negative influences under the concept of leadership. In the discussion here, however, we shall consider only influences which in some sense "help" the group.

functions which a leader may perform. They propose that a leader is a person who serves to some degree as an executive, planner, policy maker, expert, external group representative, controller of internal relationships, purveyor of rewards and punishments, arbitrator, exemplar, group symbol, surrogate for individual responsibility, ideologist, father figure, or scapegoat. Redl (37), writing in the psychoanalytic tradition, has proposed a rather different list of functions which affect mainly the group's formation, maintenance, and disruption. These functions are conceived as operating through such mechanisms as identification, cathexis, guilt reduction, impulse control, and incorporation of superego.

It is not possible at the present state of research on groups to develop a fully satisfactory designation of those group functions which are peculiarly functions of leadership. A more promising endeavor, at least for the present, is to identify the various group functions, without deciding finally whether or not to label each specifically as a function of leadership, and then to discover by empirical investigation such things as what determines their emergence in a group, what determines their allotment to certain offices or individuals, and what consequences stem from the execution of these functions under different conditions in the group.

The concept of group (or leadership) function contains two important ideas. We noted the first of these above when we pointed out that, in principle, any member of a group may be a leader in the sense that he may take actions which serve group functions. The second idea is that a given function may be served by many different behaviors. According to this conception, then, one and the same leadership function may be served by a variety of actions taken by a variety of people. It is the task of research to discover the factors that determine what actions are performed by which members of the group.

If we recall the 14 functions that Krech and Crutchfield propose a leader may perform, it becomes evident that one person could seldom be effectively responsible for them all. In most organizations, therefore, distinct functions are combined into separate *offices* and the occupants of these offices assume responsibility for providing their unique functions, and usually no others. A person who serves in a given office, moreover, has pressures placed upon him which prescribe what he is to do and how he is to do it (see Chap. 9). These prescriptions serve to create an enduring stability in the functions available for the group and their performance by particular members. An important contribution of the Ohio State Leadership Studies (40) has been a careful examination of the duties and styles of leadership included within offices in military and industrial organizations, and the documentation of how men with similar titles may vary in their behavior depending on the settings in which they work.

Under specific circumstances, of course, any given behavior may or may not serve a group function. The behavior, "makes expert information available to the group," which might be expected to help the group reach a goal, can be carried out in such a manner that it stultifies movement toward the goal. To cite another example of usually helpful behavior, a group of children may be stimulated to self-direction at a time when they are not ready for it and when a more appropriate action would be to suggest a plan of action. Or clowning by a member of a discussion group may be exactly what is needed in a tense moment to relieve strain, but at another time such levity may seem inappropriate or it may even block locomotion to the goal.

In a similar way we may conclude that the skills possessed by a designated leader, or the holder of an office, may make him well qualified to perform important group functions under certain conditions and poorly qualified under others. The pilot of a bomber crew, for example, who is an excellent leader for the group while the plane is in the air, may be a most inadequate leader if the plane crashes and the crew is faced with the task of surviving or finding its way to safety. The behavior required in directing flight operations is not necessarily the same as that required when the crew is in trouble on the ground. The specific requirements of the group's tasks demand that members possess certain skills in order to serve the appropriate functions. If the task changes, different behaviors are required, and the same person may or may not be able to perform in the new way.

In Chapter 26, Carter and his associates report experimental findings which indicate that the behavior shown by designated leaders does vary somewhat depending upon the nature of the group task. In this experiment groups were given three different types of assignments: reasoning, mechanical assembly, and group discussion. When confronted with the reasoning task the designated leader more frequently asked for information or facts. When the group was working on mechanical assembly, he was more apt to express the desire that something be done and to work actively with the men. In a discussion group he was more likely to give information and to ask for expressions of opinion. These investigators conclude that the goal or task of the group exercises influence upon the nature of the leadership behavior that arises. Much more research is needed, however, to determine more precisely what sorts of goals bring about what kinds of leadership behavior and how they exert this influence.

Just as the nature of the group task influences the kinds of leadership behavior that arise in a group, so should we expect the specific needs for group maintenance to influence leadership behavior. If a group's existence is threatened by conflicting subgroups, we might expect a leading

person to engage heavily in mediating behavior. If, on the other hand, the group's problem is that it has such low prestige in the community that members are leaving, quite different leader activities would be expected. It is unfortunate that most of the carefully controlled studies of leader behavior have been conducted with temporarily organized groups where, almost of necessity, members are not concerned with the preservation of the group.

Although we know little of a systematic kind about the processes involved, it is apparent that the nature of the leadership behavior chosen for the performance of group functions will be influenced by situational factors both inside and outside the group.

Two Basic Types of Group Functions

It will be useful for many purposes to distinguish among various group functions according to the type of group objective to which the function contributes. It appears that most group objectives can be subsumed under one of two headings: (*a*) the achievement of some specific group goal, or (*b*) the maintenance or strengthening of the group itself. Examples of member behaviors that serve functions of *goal achievement* are "initiates action," "keeps members' attention on the goal," "clarifies the issue," "develops a procedural plan," "evaluates the quality of work done," and "makes expert information available." Examples of behaviors that serve functions of *group maintenance* are "keeps interpersonal relations pleasant," "arbitrates disputes," "provides encouragement," "gives the minority a chance to be heard," "stimulates self-direction," and "increases the interdependence among members."

Any given behavior in a group may have significance both for goal achievement and for maintenance. Both may be served simultaneously by the actions of a member, or one may be served at the expense of the other. Thus, a member who helps a group to work cooperatively on a difficult problem may quite inadvertently also help it to develop solidarity. In another group, however, an eager member may spur the group on in such a way that frictions develop among the members, and even though the goal is achieved efficiently, the continued existence of the group is seriously endangered.

Although it is evident that goal achievement and group maintenance functions may be performed by any member, there are types of organizations in which "specialists" in these two kinds of functions emerge. Bales and Slater (1) have reported that in small problem-solving groups there almost always appears a differentiation between a person who presses for task accomplishment and a person who satisfies the social and emotional needs of members. In families, they propose, the father is

usually the task specialist and the mother the social-emotional specialist. Heinicke and Bales (22) have shown that where such specialization arises the effective performance of the group depends upon the development of appropriate coordination between the specialists in their separation of labor and in their commonality of interests. Grusky (19) has described the social organization of a psychological clinic in which these two types of specialists emerged. His account provides a vivid description of some of the consequences of such specialization.

Research in larger and more formal groups has also indicated the presence of these two basic functions. Factor analytic studies reported by Halpin and Winer (20) and by Fleishmann, Harris, and Burtt (10) have shown that two factors represent 83 per cent of the accountable common variance in leader behavior. These two factors have been labeled "consideration" and "initiating structure." Items with high positive loadings on "consideration" were associated with behavior indicative of friendship, mutual trust, respect, and a certain warmth between the leader and his group. Items with a high positive loading on "initiating structure" were associated with behavior on the part of the leader which tends to define the role which he expects each member to assume, and which seeks to establish well-defined patterns of organization, channels of communication, and ways of getting the job done. It is interesting to note, further, that the two minor factors identified by this research, "production emphasis" and "social sensitivity," appear also to reflect the two basic functions of goal achievement and group maintenance, respectively.

Fleishmann, Harris, and Burtt (10) report results from a large industrial organization indicating that employees liked working under foremen who were high in consideration and disliked working under those who were high in initiating structure. Proficiency ratings of the foremen revealed, however, that in production divisions the foremen with higher proficiency ratings were the ones who showed more initiation of structure but that in the nonproduction divisions those with the higher proficiency ratings manifested more consideration. In the production divisions, moreover, absenteeism was found to be positively related to initiating structure and negatively related to consideration. In summarizing the total available evidence, Shartle (40) concludes that the pattern of leader behavior which is high both in consideration and initiation of structure tends to increase group effectiveness.

Everyday experience in groups provides many examples of instances where members make group maintenance their major concern to the detriment of work to be done, or where too much interest in task achievement leads to insufficient attention to group maintenance. Managers and administrators who, for some reason, must perform both types of

functions often report that a recurring problem for them is to find a proper balance between these two types of requirements.

It has often been asserted that groups display a tendency to preserve themselves whenever they encounter a threat to their existence. Such a threat, so the argument goes, makes the group maintenance functions especially valuable to the group, and some person will spring to the rescue and assume the responsibilities of leadership by serving these needed functions. That this is an invariable "law of leadership" may be doubted. Nevertheless, it does appear that many groups do have tendencies toward self-preservation. When the existence of such a group is in jeopardy, member behavior is apt to arise which will strengthen the group's cohesiveness and resources. To the extent that these efforts are effective, they are by definition group functions, and most people would agree that these should also be called functions of leadership.

By similar reasoning we should expect goal achievement functions to become more valuable to the group when it accepts an important goal or when goal achievement is threatened. Under such conditions we might expect a heightened tendency for one or more members to perform acts designed to help the group achieve its goal. If one person does devote unusually great effort toward this end, or if he is especially effective in aiding the group, it would generally be agreed that he is performing functions of leadership regardless of his office in the group. Although systematic evidence is meager, Gibb's findings (14) lend support to this point of view. He reports that leadership activity occurred most frequently in the groups he studied when these groups were faced with a problem.

Countering the notion that groups invariably attempt to preserve themselves is the practical experience with groups which suggests that a "group pathology" may sometimes develop in which member behavior persistently does not contribute to the group's goal achievement or maintenance. Under some circumstances, a group may appear deliberately to escape from its problems by retreating to some relatively simple activity. In a problem-solving discussion group, for example, when the solution is difficult or when interpersonal conflict is intense, great energy may be devoted to the "safe" activity of listing on the blackboard all logical possibilities of action. Hours may be spent discussing whether a particular item falls under one heading or another, even though the decision will not bring the group any closer to its goal. It is extremely difficult, of course, to determine definitely whether or not such escape behavior is making an actual contribution to the maintenance of the group, since the avoidance of tension and conflict may sometimes be necessary for the preservation of the group. If, however, a group remains indefinitely on "dead center," neither improving its abilities and resources

nor moving toward a goal, we may conclude that virtually no group functions (and consequently no leadership functions) are being performed.

Leadership and Power

Ever since the days of Machiavelli there have been theorists who conceive of leadership essentially in terms of the possession and exercise of power. Although few contemporary theorists would seriously maintain that leaders of most groups and organizations in modern, civilized society rely on coercion or "brute force," realistic descriptions of group life must recognize that leadership inevitably involves the ability to influence other people in some way. The central concern with "authority" in theories of organization illustrates the importance of this aspect of leadership. Even in highly informal, voluntary groups, leaders are recognized by their ability to affect the course of events in the group. If, then, one accepts the view, advanced by such theorists as Russell (38), Lasswell and Kaplan (26), Simon (41), Dahl (9), and Cartwright (6), that social power consists of the ability to influence other people (by whatever means), leadership clearly involves the use of power.

In the functional approach to leadership advocated here, the operation of social power should be clearly recognized. We have asserted that an act of leadership consists of contributing to some group function. Usually, if not always, such a contribution requires influencing the behavior of other people in some way: activities must be coordinated, instructions must be given and accepted, persuasion must be accomplished, motivation to strive for group goals must be generated, harmonious interpersonal relations must be engendered. A person must have power to exert such influence if he is to contribute to group functions significantly and, thus, to perform acts of leadership.

When the performance of several important group functions is assigned to a single office, the operation of power is especially evident. The occupant of such an office is usually provided with the resources needed for the exertion of influence: he may have the right to hire, fire, promote, and set wages; he may possess expert knowledge, due to special training, experience, or access to essential information; and, in well-run organizations, his decisions are supported by other officials. The importance of the possession of power for effective leadership is well illustrated in Chapter 31, where Fiedler shows that groups are more effective when functioning under leaders who have a particular trait of personality—but only if such a leader also has adequate social power resulting from the support of other officials. A similar conclusion is suggested by Pelz (33) from research in a large manufacturing concern. He found that first-line supervisors whose orientation to subordinates was supportive of

their interests received positive evaluations from these subordinates—but only if the supervisor was seen as being influential in his department. Occupants of offices of leadership cannot perform the functions of leadership unless they possess sufficient power.

But even when the functions of leadership are not concentrated in formally designated offices, the possession of power is still required for their performance. The "opinion leader" of an informal group is able to influence the beliefs and attitudes of others. The "social-emotional leader" possesses the skills and resources required to make others feel comfortable and satisfied with membership in the group. And the "goal setter" is somehow capable of facilitating the conversion of personal interests into acceptable group goals.

It should be apparent that a person may be influential for a variety of reasons. In Chapter 32 French and Raven identify five different bases of power and describe some of the different consequences which stem from the use of each. The five different bases of power are: (*a*) *Reward power*, which derives from the belief on the part of the recipients of an influence attempt that they will be rewarded in some way for complying. (*b*) *Coercive power* arises from the belief that noncompliance will result in punishment. (*c*) *Expert power* results when a person is evaluated as possessing needed knowledge, information, or skills. (*d*) *Referent power* is held by a person whom others like, admire, or with whom they "identify." (*e*) *Legitimate power* derives from values held by the recipients of an influence attempt which give to the influencer the "right" to influence. Such a right may derive from appointment or election to office, or from other determinants of one's position in the group.

Acts of leadership, if they are to be effective, must rely upon some basis of power. Although little research has been conducted to discover the effects upon groups of having leaders who employ predominantly one or another basis of power, the analysis of these bases presented by French and Raven suggest several interesting hypotheses about what these effects may be.

Distribution of Functions among Members

The conception of leadership proposed here implies that important group functions may, in principle, be performed by various members of a group. What determines whether particular people engage in behaviors relevant to group functions? What determines whether a person is allowed or urged to do so? We consider first those factors which foster the taking of initiative in leadership. Then, we shall examine some of the ways in which functions are assigned to members.

Determinants of initiative in leadership. In order for a member to

take the initiative in attempting to serve a group function, at least two conditions appear necessary: (*a*) He must be aware that a given function is needed. (*b*) He must feel that he is able to perform it, that he has enough skill to do so or that it is safe for him to attempt to do so.

Ideally, one might hope that a specific behavior by a member, such as offering a summary statement, furnishing a new suggestion, or making a tension-relieving remark, will occur when it is needed. This ideal, to be sure, is seldom met, yet there is evidence that members' leadership actions are in large part determined by the group's needs. Bales and Strodtbeck in Chapter 33, for example, show that certain behaviors in a problem-solving group tend to appear at one stage in progress toward a solution while other behaviors occur in a different phase. Parker (32) reports that specialists in social-emotional leadership in a mental hospital are more likely to engage in leadership actions when a conflict develops between patients and staff which produces in the patients a need for social support. Heyns (23), Carter, *et al.* (Chap. 26), and Crockett (8) observe that, when a designated leader does not perform the leadership functions he is supposed to provide, other members step in to perform them in his stead. Further evidence is provided by Kahn and Katz (Chap. 29) who note that informal leaders tend to spring up in groups where the foreman fails to furnish adequate leadership. And, Haythorn (21) reports that when one member takes a large measure of initiative in a group, others are likely to show less of such behavior than they ordinarily would.

When achievement of a group goal is important to its members we should find, then, more readiness to take initiative than when the goal is unimportant to them. Results from a study by Crockett (8) are relevant here. He observed that members who exerted leadership functions were those who were most interested in and concerned about the decisions to be made in the group. In Chapter 30 Hamblin presents evidence indicating that threat to achievement of the group goal tends to increase the frequency of leadership actions.

Other properties of the group also stimulate the spontaneous execution of group functions by members. The degree of facilitative interdependence among members, for example, increases the responsibility felt by participants for one another, and therefore the amount of active effort they make for goal achievement, according to the results reported by Thomas in Chapter 23. A different group property, the channels of communication available within the group, affects the readiness of particular individuals to assume responsibility for certain functions. The studies reported by Bavelas and by Guetzkow (Chaps. 35 and 36) illustrate this point by showing that different communication networks have quite different effects on the participation of members in various group

functions. In general, those members who are more central in the network tend to perform functions which others consider to constitute leadership.

To some degree people located centrally in a communication network take initiative to serve the group because they feel that their positions make others dependent upon them. An experiment by Pepitone (35) has demonstrated the effects of the awareness that one's actions are essential to the group. Certain group members were told that their job was more important to the group than were the jobs assigned to others. (In reality all members had identical work to do, though they did not know this.) The results of the experiment show that those who felt their assignments were more important developed greater feelings of responsibility to the group and were more ready to devote energy to the group task. It might be expected, in general, that whenever the members of a group experience a feeling of worth and acceptance by the group they will develop greater feelings of responsibility to the group and an increased readiness to perform group functions. This conclusion is given some support by the findings from an experiment conducted by Pepinsky *et al.* (34) in which paid participants (pretending they were regular subjects) systematically either supported or rejected the comments of other members of the group. It was found that members made considerably more leadership actions in the groups with an accepting atmosphere than in those with a climate of rejection.

In most groups some type of discretion is used in determining who will be allowed to perform leadership acts. It is usually seen as inappropriate, for example, for a newcomer to press his views upon others. The standards of the group may designate who is to serve the group, and when. Berkowitz (3) illustrates such a standard in his study of conferences in business and governmental agencies. He found a highly consistent tendency in these committees for members to prefer that the chairman exercise his designated functions concerning processes in the group without allowing others to share in them. Members were not to be excluded from expressing ideas relevant to the substantive topic at hand, but the chairman was to run the meeting. In moments of urgency, this group standard was revoked and sharing of procedural functions by members was temporarily allowed until the emergency had passed.

Certain personal characteristics are known to affect the amount of initiative individuals exercise in groups. It has been found, for example, that members participate more in the fulfillment of goal achievement efforts if they are confident of their own views (12), if they are high in ego strength (46), and if they have a high need for achievement. It has frequently been observed that a "hunger for power" brings people to assume functions of leadership. Some people, it seems, derive important

satisfactions from "running things." Carter, *et al.*, report in Chapter 26 that persons who emerged as leaders in a leaderless group tended to be more aggressive, forceful, and dominating in their behavior than were appointed leaders under comparable conditions. It would seem probable that the emergent leaders possessed stronger need for power and found the leaderless group an ideal opportunity for gratifying this need. Guetzkow describes in Chapter 36 an experiment in which people came to assume certain roles when no explicit assignments were made. He found that those who took on the role of "keyman" scored higher on a test of "ascendance" than those who did not become this sort of leader. Additional data are provided by Veroff (47) who has attempted to measure power motivation by means of a projective test. He found that college students who obtained high scores on the test were rated by their instructors as high in argumentation and attempts to control others. Students scoring high, as compared to low, reported more frequently that they would gain satisfaction from being a leader. These findings tend to support the view that initiative in leadership may derive in part from power motivation. Caution is suggested, however, by other results obtained by Veroff which lead him to conclude that the test may measure both motivation for power and motivation for recognition.

The consequences to the group of power motivation among group members may be favorable or unfavorable. It is possible for a "power grabber" to help a group achieve its goals and maintain itself. It is also possible, however, that when an individual's major motivation is the possession of power, his behavior will serve mainly his own needs without contributing to the group's locomotion or maintenance. In such a case he displays what Fouriezos, Hutt, and Guetzkow (11) call self-oriented behavior.

The needs and attitudes of those who do *not* assume functions of leadership constitute yet another influence upon the distribution of these functions. It is the experience of many adult leaders of youth groups that the less mature members avoid accepting responsibility by asking the adult leader to make decisions for them. If the adult leader finds personal satisfaction in having others dependent upon him, a sort of unconscious "collusion" may develop in which members and leader both gain satisfaction out of the concentration of functions in the hands of the leader. Boys in the clubs led by an autocratic leader (Chap. 28), as an illustration, often developed an apathetic reaction to the person who was in charge. This accommodation of leaders and members, to one another, may endure in attitudes as well as behavior. In an experiment concerned with the effects of two different styles of supervision in a business office, Tannenbaum and Allport (44) obtained measures of workers' attitudes and personal characteristics at the time the supervisory styles were in-

troduced and again a year later. As a consequence of supervision in which the foreman kept almost all leadership functions for himself it was found that the workers' attitudes and behaviors changed in ways indicating they were less willing and able to exercise leadership functions, while as a result of leadership in which the supervisor made opportunities for workers to share in group functions, the changes were in a direction indicating that members were more ready to take initiative.

Assignment of group functions. When offices have been designated in a group, what determines who is assigned to them? If specialized skills are required to fill a given office, the case is usually clear. Thus, a person who is sensitive to problems of human relations is often sought to perform the group maintenance functions in the personnel department of a business firm, or an unexcitable person is asked to serve as mediator during a conference between disagreeing subgroups. Studies illustrating the group's tendency to select useful contributors are seen in Chapters 26 and 27. Those who were chosen as leaders had more often sought to organize the group, to solicit and integrate contributions, and to propose courses of action, than did those who were not selected as leaders. Schrag (39) has shown the operation of a similar process, but with rather different consequences, in a setting where the group is in conflict with its social environment. In this study the inmates of a prison were asked to nominate those whom they would want to represent them on the prisoners' council. The convicts most often named were those who were most recalcitrant, most violent, and with a record of such infractions of prison regulations as escape, attempted escape, fighting, and assault. Since the relations between prisoners and the management of the traditional sort of prison are characterized by conflict and hostility, it appears that the prisoners were choosing as leaders those men who might be expected best to carry on the fight.

It sometimes happens, of course, that a person is chosen for a position of leadership even though he clearly lacks ability for the job. An example would be the youth group that elects a popular but incapable athlete as chairman. Although defects in the machinery for selecting leaders may account for some inappropriate assignments (and little is known about these), there is evidence that certain conditions in the group affect members' willingness to accept a valuable contributor as leader. Theodorson (45) has described, for example, how group cohesiveness may affect the evaluation of participants in adult discussion groups. He reports that members of highly cohesive groups felt that their personal needs and those of the group were one and the same, with the result that effective participants in the group were seen as helpful to all members in gratifying their own needs. Members in less cohesive groups had disparate needs, and a good contributor was less likely to satisfy these many different needs. A somewhat similar conclusion has been reached by Israel

(24) in investigations of cooperative and competitive groups. In the cooperative group a valuable member is accepted and wanted, but in a competitive group he is not appreciated and seen, instead, as a rival. These effects may be more fully understood in the context of our discussion of group goals and personal evaluation in Chapter 19.

If a person is granted the right to exercise important leadership functions for a group, he must meet to some degree the group's expectations or he will lose his following. Hamblin reports in Chapter 30 that influential persons who were not effective in helping the group during a time of crisis were soon replaced. The dependence of the leader upon the approval of his followers is most clear when his power to influence is based on identification, expertness, and legitimacy. If these bases are undermined, the leader cannot exert the influence required without resorting to coercion or rewards.

Effects of different distributions of functions. In some groups all members are expected to take over as much responsibility for any functions as conditions will allow. At the other extreme, groups may concentrate all functions in one person and punish any member who attempts to usurp any of them. What are the consequences of restricting the functions to a few offices in a group? What are the results of distributing them more widely? These are questions that have stimulated much debate, but few answers can be supported by indisputable facts. There are those who believe that greater efficiency results when all leadership functions are concentrated in a few roles—the officers. They maintain that "too many cooks spoil the broth." And there is much reasonableness in the argument that if everyone has a final "say" in running the group, chaos will result unless all want to "say" the same thing. On the other hand, it is argued that the concentration of authority in the hands of a few undermines the motivation of the rest, thus destroying enthusiasm, morale, and creativity, and engendering conflicts and hostility between leaders and followers.

There is undoubtedly some justification for each position. Bavelas (Chap. 35) reports that when experimental groups are working on certain tasks, the concentration of leadership results in both more efficient group performance and lower morale. It should be noted, however, that in these experiments the groups did not exist long enough for any demoralizing effects to show up in reduced efficiency. Gilchrist, *et al.* (17) have observed that a central person can even be a detriment to a group's accomplishments if he has too much work (information) to handle so that he cannot effectively help others. Research reported by Kahn and Katz (Chap. 29) also indicates that the concentration of functions may have mixed results. They found, for example, that high producing groups in business and industry tend to have supervisors who take responsibility for planning the work, providing materials and coordinating, but the

supervisors of these productive groups also are more inclined to delegate responsibilities to others in the group and to encourage members to make decisions and to take initiative in many activities.

This same issue is often raised on more ideological or ethical grounds. Many writers have insisted that group procedures are more democratic if the functions of leadership are widely shared. Others have replied, however, that the essence of democracy is not the wide distribution of leadership functions, but rather the fact that groups are allowed to assign and reassign leadership functions without arbitrary dictation. We shall not engage here in this debate over the meaning of democracy. Important empirical findings are available, however, in the studies reported by White and Lippitt (Chap. 28), Preston and Heintz (36), Bovard (5), Coch and French (Chap. 18), and Levine and Butler (27). All of the leaders in these experiments were externally imposed upon the group, but even so those leaders who tended to distribute the functions of leadership more widely obtained group performances generally regarded as "better" in our society. When production was measured, it was higher. When interpersonal affect was measured, it was more friendly. And when cohesiveness was measured, it was stronger.

In order to clarify this issue further, it will be necessary to rephrase the question. Rather than ask, "How much concentration should there be?" we should ask, "What things result when functions are combined in certain ways under specified circumstances?" Then we shall almost certainly conclude that different degrees of concentration are required for the accomplishment of different purposes under different circumstances.

Overview of Research Reported in this Section

It should be apparent from the preceding discussion that the problem of leadership cannot be sharply separated from many other problems of group functioning. All the other sections of this volume contain materials relevant to the topic of leadership and performance. In this section we have selected eight papers which focus upon the twin tasks of describing leader behavior and of discovering the consequences of leadership.

The first cluster of papers consider the nature of leadership and the effects of different leadership styles. In Chapter 26, Carter, Haythorn, Shriver, and Lanzetta report an attempt to record the actual behavior of group members "in such a fashion as to allow definitive statements regarding the activities of one member relative to those of other members." Using a standardized scheme of observation, they recorded the behavior of members in groups with a designated leader and without. They found that certain kinds of behavior were more typical of leaders while other kinds were displayed more by ordinary members, and that the actions of

designated leaders were not exactly the same as those of leaders who emerged from the groups to take over leadership. Kirscht, Lodhal, and Haire describe in Chapter 27 a method somewhat similar to that employed by Carter, *et al.*, which they used to determine the kinds of behaviors shown by those persons who are elected as leaders by their groups. The findings of these two studies are in considerable agreement.

The experimental study reported in Chapter 28 by White and Lippitt has now become a classic. It has added great impetus to the functional approach to leadership and has served to stimulate much of the research in this field. The leaders in this investigation were not peers of the group members but were adult leaders of youth groups. They were trained to be capable autocratic, democratic, or laissez faire leaders. The behavior of the leaders and of all the members was carefully observed and recorded in quantitative terms. The results show clearly that the different patterns of leadership behavior resulted in distinctive kinds of behavior among group members. Both group solidarity and group productivity differed markedly, and a characteristic emotional atmosphere developed in each group.

The field studies described by Kahn and Katz in Chapter 29 were conducted in business and industry with the purpose of identifying the characteristics of supervisors who lead productive, in contrast to less productive, crews. The behaviors revealed by the better supervisors appear to serve the two broad functions of leadership outlined above by contributing to the achievement of group goals and to the maintenance of the group; the good supervisor possesses both the technological skills needed to perform group tasks and the ability to help members satisfy their important needs. This research demonstrates that it is possible to identify different styles of leadership in ongoing institutions and to determine the consequences of each style. Although the settings studied are quite different from those of the laboratory experiments reported elsewhere in this section, the two sorts of settings yield quite consistent findings.

The relations between leadership and social power are considered in a second set of papers. In Chapter 30 Hamblin reports a laboratory experiment in which he observed the processes of influence among group members when the group entered a period of crisis. His results show that the most influential persons prior to the crisis increase their efforts to exercise influence when the group meets an emergency, but their tenure as leaders is cut short unless they prove helpful to the group in dealing with the urgent situation.

Fiedler presents in Chapter 31 the major results from a series of carefully planned and integrated field studies which cast light on the relations between the personality of leaders, their social position in the group, and group effectiveness. In all of these studies he administers a

test to leaders which is designed to reflect how much similarity they see between their best and worst co-workers. This measure, labeled ASo or "assumed similarity of opposites," is interpreted by Fiedler to indicate the degree to which the leader keeps his personal feelings separate from work-related criteria in evaluating others and thus maintains a "psychological distance" between himself and his followers. Fiedler then demonstrates that the effectiveness of groups is significantly related to the scores of their leaders on this test, provided that certain other conditions are met. The most important of these is that the leader have sufficient power for his behavior to "make a difference" to the group.

The concept of social power is subjected to a theoretical analysis by French and Raven in Chapter 32. They attempt to identify the major types of power and to define them systematically so that their major effects can be discovered. Five different bases of social power are discussed. This analysis provides a number of hypotheses which could be readily tested in studies of leadership.

Finally, Bales and Strodtbeck present in Chapter 33 data relevant to the task of isolating and describing group functions in discussion groups. They have recorded in great detail the kinds of interactions that take place among members of such groups. As a result of this work they are able to show that certain types of groups go through definite phases in the course of solving problems. These phases are defined in terms of certain group functions that are required for the group to reach a solution to its problem.

The reaction one derives from all this work is one of optimism and encouragement. Although leadership and group performance are confusing and complicated concepts, a beginning has clearly been made in isolating some of their major components. As our understanding of the nature of these phenomena is advanced, the practical problems of improving group life will be more readily solved. An excellent beginning has now been made toward settling ideological arguments about how leaders should behave. When the consequences of different leadership procedures can be regularly predicted, then those procedures may be chosen which best lead to preferred criteria of performance. Finally, it is becoming evident that problems of leadership and group performance cannot be safely separated from problems of followership and effective membership. As our understanding of groups becomes broadened, the mystery of leadership diminishes.

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26

The Behavior of Leaders and Other Group Members

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The psychological literature is replete with lists of behaviors or traits which purport to characterize leaders. *Psychology for the Armed Services* (4) has a section on "The Attributes of Leadership," which suggests that a leader exercises authority, is competent, industrious, confident, responsible, etc. Bird (3) reviewed "approximately twenty inquiries bearing some resemblance to controlled investigations" and compiled a list of 79 traits which were said to characterize the behavior of leaders. As he points out, "surprisingly little overlapping is found from study to study."

More recently there have been careful investigations attempting to characterize the followers' opinions regarding typical leadership behavior. Notable among these studies are those of Hemphill (9), Roff (13), and Sanford (14). In each of these studies respondents were asked to describe things leaders did or, as in part of Sanford's study, the things that leaders should do. While such reports are very useful in giving the non-leaders' perceptions of what they think leaders do or should do, they may not adequately represent the actual behavior of the leaders on which the respondents are reporting. This problem seems particularly acute in those studies in which information was collected some months after the respondents had left the groups on which they were reporting. It would at least seem reasonable that these results include a mixture of actual behavior, the respondents' rationalizations regarding the behavior, and cultural stereotypes of good and poor leadership.

There have been surprisingly few attempts to describe the behavior exhibited by persons in a group setting by direct observation with immediate recording. Parten (12) and Murphy (11) have made such observations

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on young children, and more recently Bales (1) has given a more detailed characterization of the activities of the members of one group of five persons. Lippitt (10) has presented some data showing the relative contributions of leader and delegate in a discussion group, but uses only very molar descriptive categories. As far as is known, there is no detailed description of the actual behavior of group members obtained in such a fashion as to allow definitive statements regarding the activities of one member relative to those of other members. This study reports such results. Lest there be misunderstanding, it should be emphasized that the particular results obtained are certainly not characteristics of leaders in all situations or for groups of any size. They are thought to be characteristic of individuals working in small homogeneous groups on tasks similar to those described.

Procedure

The subjects were 40 NROTC junior students. By means of sociometric measures of friendship and leadership, the subjects were formed into five groups of eight with as equal leadership potential and as low mutual friendship ratings as possible. Each of these groups of eight was then run in a leaderless group session on three tasks: reasoning, mechanical assembly, and discussion. The tasks are described in some detail in a previous publication (5). On the basis of leadership ratings based on this performance, each group was broken into two smaller groups of four, selected so that each group would have an approximately equal distribution of leadership ability. These groups of four were then run on three similar tasks. In the results this group will be referred to as working in "the emergent situation." [1] At the second meeting of the group one member had been withdrawn and replaced by an individual having a similar leadership rating but from another group. This new individual was appointed as the leader in the presence of the other three group members.

While the subjects were working on the tasks, they were observed through one-way mirrors by two independent observers who classified their behavior in terms of a coding system involving 53 categories. This system and the categories are described in detail elsewhere (6). At the completion of each task, the observers rated each of the subjects on a seven-point rating scale on a number of characteristics, including leadership. The reliability of the ratings and categorizations is generally adequate and is fully presented in (7).

[1] "Emergent situation" refers to what has been frequently called the "leaderless situation." It is felt that "emergent" is more appropriate, since "leaderless" connotes a lack of leadership whereas in our groups a leader usually emerged.

Results and Discussion

Since one of the major comparisons to be made is between leaders and other group members, it is important to define carefully how the subjects designated as the leaders were selected. In the case of groups working in the appointed situation, the subject appointed as the leader is considered the leader. In certain of these groups, the individual who was appointed was not the real or functional leader in the sense that some other person in the group was rated as the more effective group leader. However, an analysis of the ratings made by the observers shows that the average leadership ratings of the appointed leaders were significantly higher than the average rating of the remaining group members. (The difference was significant at past the .01 level for reasoning, at .02 for mechanical assembly, and at .02 for discussion.) The average ratings of the appointed leader and those of the best other leader in the group are essentially the same with all the *t*s being less than 1.

In the case of groups working in the emergent situation, the leaders were determined by selecting the individual in each group who received the highest leadership rating from the group observers. There is some problem of circularity in the treatment of our results for these leaders, although we believe it to be largely mitigated. The observers categorized the subjects' behaviors into a continuous ongoing record; for a typical group this might involve some 2–300 categorizations per task. Before these categorizations were even transcribed, the ratings were made by the observers. Thus the ratings are based on over-all, global impressions of performance, not on a consideration of the detailed categorizations.

The subjects we have called the "leaders" are simply the individuals so designated in the appointed situation or the individuals receiving the highest ratings in the emergent situation. The problem is: What do such leaders do which differentiates them from the other group members?

The results for the appointed situation are based on an analysis of the complete records for 10 groups. Thus, throughout the analyses the comparison is between 10 leaders and 30 other group members. For the emergent situation, the comparisons are for 8 leaders and 24 others on the reasoning task, for 7 leaders and 21 others on the mechanical assembly task, and 9 leaders and 36 others on the discussion task. While more groups were run in the emergent situation, defective tape recordings reduced the number of cases on which complete data were available. (Incidentally, the use of modified Stenographs (6) has almost completely eliminated defective records and is less expensive.) Levels of significance throughout this paper are based on *t*s calculated from the distribution of frequencies for a particular category attributable to each individual with

*N*s as indicated above. Thus where significant differences are indicated they were conservatively determined, and the number of degrees of freedom is not inflated by considering each act as the base unit for analysis.

Since there were 53 categories, three work tasks, two types of situations and the totals analyzed, there were 324 possible comparisons. Of these possible comparisons, 159, or about half, were automatically eliminated because of the very small number of behaviors falling in these categories. It was arbitrarily decided that no category would be considered unless there was an average of at least one such behavior per task-session. As Bales (1) points out, an act such as a bald command or a crucial insight may happen only once and yet be most important in determining a long sequence of action. Even so, we as yet have no adequate way of handling behavior which occurs with such small frequency.

Of the 165 actual comparisons made, the leader's behavior differed from that of the other group members with a frequency which was significant at the 1% level or beyond in 34 comparisons, at the 2–5% level in eight cases, and at the 6–10% level in 12 comparisons. Table 37.1 shows the average number of behaviors falling in any category (col. 1 for each task), the percentage of such behavior attributable to the leader (col. 2), and the percentage attributable to the average of the other three group members (col. 3). This table includes only the categories for which at least one of the six possible comparisons was significant at the 10% level or better. In other words, there were only 20 categories in which any significant differences occurred when as liberal a criterion as the 10% level of significance is used. There were 10 categories which had less than an average of one behavior per task for any task and 23 other categories in which there was considerable behavior recorded, but where there were no appreciable differences between the leaders and others. In other words, there is a considerable number of categories, probably well over one-half, in which the leader's behavior does not differ significantly from that of the other members of the group. The exact nature of this similar behavior will be considered later.

First let us consider the kinds of behavior which seem to differentiate leaders from the other group members over all the tasks and group situations. Category 23, "diagnoses situation—makes interpretation," and category 50, "gives information on carrying out action," are the only two categories in which the leader consistently shows a statistically significant different level of activity from the other group members. Thus, the type of behavior which characterizes the leader, whether he is appointed or emerges, without regard to the task involved, is the making of interpretations about the situation and giving information on how to carry out the activity. There are other items which also seem to be similarly related although they do not always reach acceptable levels of statistical signif-

TABLE 31.1

BEHAVIOR OF GROUP MEMBERS WHICH DIFFERENTIATES LEADER FROM OTHERS

Category	Leadership Situation	Reasoning			Mechanical Assembly			Discussion		
		No. Behaviors in Av. Session	Per Cent Attributable to Leader	Av. Per Cent Attributable to Non-Leaders	No. Behaviors in Av. Session	Per Cent Attributable to Leader	Av. Per Cent Attributable to Non-Leaders	No. Behaviors in Av. Session	Per Cent Attributable to Leader	Av. Per Cent Attributable to Non-Leaders
21. Calls for attention	Appt.	2.3	27	24	1.1	23	26			
	Emerg.	5.0	49	17 *	2.9	25	25			
22. Asks for information	Appt.	39.6	43	19 ‡	11.2	26	25	7.8	33	22
	Emerg.	43.8	30	23 ‡	6.3	34	22	6.4	28	24
23. Diagnoses situation	Appt.	38.4	35	22 †	32.8	37	21 ‡	10.2	47	18 ‡
	Emerg.	39.2	36	21 ‡	27.9	35	22 ‡	9.8	43	19 ‡
24. Asks for expression of opinion	Appt.	4.2	53	16 ‡	1.0	26	25	6.7	46	18 ‡
	Emerg.	1.3	38	21				11.8	41	20 ‡
26. Proposes course of action for others	Appt.	8.4	45	18 ‡	10.6	36	21 *	6.0	37	21
	Emerg.	8.8	45	18 ‡	10.1	43	19 ‡	6.2	59	14 ‡
27. Supports his proposal	Appt.	2.3	30	23	2.2	47	18 ‡	30.1	18	27
	Emerg.	2.3	31	23				30.8	46	18 ‡
28. Defends his proposal from attack	Appt.	1.5	37	21	1.0	47	18 *	6.0	14	29
	Emerg.	1.8	39	20				8.5	36	21 *
29. Initiates action	Appt.	4.5	66	11 ‡	3.0	45	18 ‡	1.2	64	12 ‡
	Emerg.	2.5	33	22	4.7	39	20 †	2.3	36	21
31. Agrees or approves	Appt.	11.2	32	23	3.7	40	20 ‡	11.2	34	22
	Emerg.	8.1	32	23	2.6	17	28	13.2	34	22 *
32. Gives information	Appt.	30.2	27	24	16.4	30	23	14.0	35	22 †
	Emerg.	10.5	28	24	11.7	25	25	6.8	41	20 ‡

* Significant at .06–.10 level † Significant at .02–.05 level ‡ Significant at .01 level or better

TABLE 37.1 (Continued)

Category	Leadership Situation	Reasoning: No. Behaviors in Av. Session	Reasoning: Per Cent Attributable to Leader	Reasoning: Av. Per Cent Attributable to Non-Leaders	Mechanical Assembly: No. Behaviors in Av. Session	Mechanical Assembly: Per Cent Attributable to Leader	Mechanical Assembly: Av. Per Cent Attributable to Non-Leaders	Discussion: No. Behaviors in Av. Session	Discussion: Per Cent Attributable to Leader	Discussion: Av. Per Cent Attributable to Non-Leaders
33. Gets insight	Appt.	14.1	34	22 ‡	5.7	32	23			
	Emerg.	8.9	35	22 *	9.6	38	21 †			
35. Expression of opinion	Appt.	7.9	32	23	6.0	31	23	37.3	23	26
	Emerg.	4.4	39	20 *	2.6	30	23	35.2	38	21 ‡
40. Disagrees or skeptical	Appt.	7.1	17	28	4.8	35	22	10.3	18	27 †
	Emerg.	6.9	23	26	4.0	27	24	9.6	19	27
41. Argues with others	Appt.							2.3	12	29
	Emerg.	2.5	20	27				3.3	39	20 *
50. Gives information on carrying out action	Appt.	2.7	65	12 ‡	11.3	45	18 ‡	2.1	76	8 ‡
	Emerg.	3.3	52	16 †	11.4	52	16 ‡	3.0	62	13 ‡
52. Desires something to be done	Appt.				1.2	50	17 ‡			
	Emerg.				1.0	46	18			
55. Integrates group behavior	Appt.	1.7	45	18 *				2.0	73	9 ‡
	Emerg.	1.8	56	15 ‡				1.1	40	20
51. Offers to help	Appt.				8.4	22	26			
	Emerg.				15.3	17	28 *			
56. Performs simple work unit	Appt.	56.6	24	25	68.5	27	24	5.7	55	15 ‡
	Emerg.	69.9	24	25	70.0	27	24	6.3	15	28
90. Stands around doing nothing	Appt.				13.8	11	30			
	Emerg.				10.3	12	29 *			
Total	Appt.	269.0	32	23 †	294.9	29	24 *	197.0	29	24
	Emerg.	248.0	31	23 ‡	289.6	28	24 †	192.7	38	21 ‡

icance, usually due to their relatively infrequent occurrence. Such categories are number 26, "proposes course of action for others," number 29, "initiates action toward problem-solving which is continued or followed," number 33, "gets insight," and number 55, "integrates group behavior." These categories, along with the two previously mentioned, definitely imply that leaders are characteristically concerned with (*a*) getting insight or analyzing the situation, and (*b*) with initiating the action required.

It seems that in some cases the leader's behavior is determined by the task on which the group is working, whatever the situation. Uniquely associated with the reasoning task is category 22, "asks for information or facts," which is to be expected, since in this task information from each of the subjects must be coordinated to obtain a solution to the syllogistic reasoning problems. Specifically related to the mechanical assembly task are category 52, "expresses a desire that something be done," and probably category 90, "stands around doing nothing." Again these behaviors are the kind that would be expected from the nature of the task. The mechanical assembly task involves a large number of work units. Once the general plan of construction is perceived, there are sufficient work units for all to participate. Thus, we find the leader on this task "expressing the desire that something be done" and not "standing around doing nothing," since the task demands that the leader be active in getting others to enter into the work. Associated with leader activity on the discussion task are category 24, "asks for expression of feeling or opinion," category 31, "agrees or approves," and category 32, "gives general information," and perhaps a low score on category 40, "disagrees or skeptical." Here the discussion leader seems typically to give information, and to ask for expressions of opinion, but he does not disagree; rather he approves or agrees. These are the types of behavior in discussion that the leader has freedom to engage in because of the kind of task involved.

Finally, there seem to be interesting differences in behavior depending on whether the group was working under emergent or appointed leader conditions. It appears that in the appointed situation the leader may perceive his role as that of a coordinator of activity or as an agent through which the group can accomplish its goal. In the emergent group, on the other hand, the person who becomes the leader may take over the leadership by energetic action and by trying to get the other members to accept his leadership. The leaders of the emergent group discussion tasks show much greater over-all activity than the leaders in any other situations or tasks, as may be seen from the "total" row in Table 37.1. Category 21, "calls for attention," is significant only for the reasoning task in the emergent situation. Category 27 is "supports or gives information regarding his proposal." For the discussion task in the appointed situation, a con-

siderable amount of behavior is classified as 27, but the individuals showing most of this behavior are the non-leaders. In contrast, in the emergent situation the leader has many more 27s attributable to him than do the non-leaders. Similarly for category 28, "defends self (or his proposal) from attack," for category 35, "expression of opinion," and for category 41, "argues with others." Exactly the reverse is found for category 66, "performs a simple work unit," where the appointed leader shows a great deal of such behavior and the emergent leader very little. In the discussion task, this category was used to indicate the routine recording of opinions and writing of conclusions. In the emergent situation, the leader had someone else do this routine work, whereas in the appointed situations the leader tended not to impose the writing chore on someone else.

All these results were contrary to expectations. It was assumed that the appointed situation would be structured more in an "authoritarian" direction than the emergent situation would be. The reverse seems to have occurred. The results for the appointed situation may be explained by speculating that the appointed leader conceives his role as one of coordinator rather than as a director or controller of the group's activities. This would apparently be the role expected of him by the majority of group members. Some incidental evidence bearing on this point was obtained in interviews with subjects dealing with their behavior when they were appointed leaders. In general, they felt that as leaders they should not interfere with the group's activity, that the other members of the group were as capable of doing the tasks as they were, and that their main job was merely "to keep things moving." It can probably be said, then, that the appointed leaders conceive their chief function to be that of moving their groups toward agreeing on a solution to the problem presented and initiating action toward this solution. The appointed leaders attempted to do this by eliciting the opinions of the group members, minimizing conflicts, and integrating in written form those opinions on which there was general agreement. The leaders of the emergent groups, on the other hand, had to establish their positions of leadership by being forceful and strongly supporting their own proposals in competition with other potential leaders. It may be that individuals rated as leaders in the emergent situations were competing for high status positions, whereas the individuals appointed as leaders had their status positions secured, and the nature of their positions required that they become more involved in the goals of the group as a whole.

In some respects the categories on which the leader does not differ from the other members of the group are of equal interest with those areas where there is a difference. Categories 1 through 12 included "personal feelings of," i.e., such things as confusion, aggressiveness, and friendliness. Unfortunately, not a large number of behaviors were recorded in

this area, but of those recorded, there seemed to be no outstanding differences between leaders and others. Item 30, "supports proposal of another," while used fairly frequently is shown about equally by the leader and by the other members. However, just as some leaders' differential behaviors were specific to particular tasks, so some similarities seem to be related to specific tasks. In the reasoning task, the leader did not give information (category 32) significantly more frequently than others, nor did he perform simple work units (category 66) more frequently. For the mechanical assembly task, it is particularly noticeable that of 17 comparisons made on categories 60 through 68, only one comparison was significant at even the 10% level of confidence. In other words, the leader did not differ from others in the amount of helping with work, performing simple work units, etc. There seem to be no outstanding similarities for the discussion task, which reinforces the belief that in this task being appointed or not is a very important determinant of the behavior elicited.

An incidental but very important conclusion indicated by the above findings is that the generality of the results of small group research will often be limited by the kind of task used. Much of the work in this field, such as that of Bales (1), Bass (2), and French and Bell (8), has been done on discussion groups. It seems apparent that the requirements of the task and the formal characteristics of the group structure will importantly determine the results observed.

Summary

Using a system of categorization, individuals were observed working in small groups on reasoning, mechanical assembly, and discussion tasks. Some groups worked with an appointed leader and others in an emergent situation. The behavior of the leaders is compared with that of other group members. The unique behavior of leaders over all situations and tasks was concerned with (*a*) analyzing the situation and (*b*) initiating action required. Other leader behaviors seemed to be associated with specific tasks or situations. In the discussion task, and to some extent on other tasks, the leaders who emerged in the emergent situation were more "authoritarian" than were the leaders who were appointed. Except in the discussion task, leaders and other group members do not tend to differ greatly in the amount of work performed. It is emphasized that the behavior of group members is considerably determined by situational and task-dictated requirements.

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27

Some Factors in the Selection of Leaders by Members of Small Groups

John P. Kirscht, Thomas M. Lodahl, and Mason Haire

Several studies have reported the relationship between leadership and the rate of participation. Bass (2) found a correlation of .93 between ratings on leadership and the amount of participation time in ten-person groups. However, the size of this correlation may be partially the effect of using the subjects as raters and of the prior acquaintance of the subjects in a class. A study by Borgatta and Bales (3) reports that high ratings on leadership by group members tends to be associated with high rates of interaction-initiation. Moderate but consistently positive correlations between amount of participation and sociometric scores were found by Peterman (6).

Although such findings are not unexpected because of the generally task-oriented behavior of laboratory discussion groups, participation, by itself, may not be very predictive of leadership. Slater (8) reports that leadership as rated by other group members coincided with highest participation in only 11 of 20 discussion groups.

Other researchers have attempted to specify the particular kinds of interaction that differentiate the leaders of small groups. Carter, Haythorn, Shriver, and Lanzetta (4), using four-person groups, examined the interaction in 53 scoring categories. Two of these categories consistently differentiated leaders in three kinds of tasks: "diagnoses situation—makes interpretation" and "gives information on carrying out action." Other categories that showed differences, but not as reliably were: "proposes course of action for others," "initiates action toward problem-solving which is continued," and "integrates group behavior." It was also found that in the reasoning task, leaders ask for information or facts significantly more often than nonleaders. Furthermore, Shaw and Gilchrist (7) found that leader rank and the number of written communica-

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tions sent were positively related and that the major source of the difference for leaders was communications about organizing the group and giving factual information.

Thus it seems that leaders are persons who organize the group, solicit and integrate contributions, and propose courses of action. A high rate of participation would not necessarily be associated with these behaviors.

The present study was designed to investigate the relationship between amount of participation, frequency of task- and group-oriented interaction, and the selection of leaders by other group members. The general hypothesis was that amount of participation and organizational-integrative interaction are both associated with leader selection, but that each may reflect different aspects of the criterion.

Method

Two three-person groups met simultaneously in separate rooms and were given identical instructions by the experimenters. Each group discussed a human relations problem for about 20 minutes, reaching a group consensus in that time. The groups were then told that a second meeting would take place immediately in which one person from each group would act as a representative; the two representatives would discuss a concrete problem related to the previously discussed topic. Each group then selected one of the members to act as representative.

Tape recordings of the meetings were scored for the amount of time each participant talked. Also, each meeting was scored with a system of eight categories based on Bales' (1) system. In general, the unit of analysis was one simple statement. The three relevant categories and their definitions follow:

D. Gives suggestion (any statement which proposes a course of procedure but is *not* simply an expression of opinion, e.g., "Let's have each person give his solution"—not, "I think teachers should unionize").

E. Asks for suggestion, opinion, fact (any request which is not for repetition or rhetorical purposes, e.g., "What do you think?" or "Would you agree that . . .").

F. Sums up, integrates (any statement attempting to organize the points covered in the discussion, or to bring together diverging opinions, or to re-word or make explicit opinions of others, e.g., "We seem to agree that strikes are bad"; "These restrictions would qualify what we said earlier").

These three categories will be referred to as "DEF." They define group-oriented, organizational kinds of interaction and are similar to the categories that differentiated leaders in the Carter *et al.* (4) study. It was hypothesized that the interaction scored in these categories would dis-

tinguish those members who would be chosen by the group as representatives from those not chosen.

Data were obtained on 26 three-person groups. Two of the groups were discarded because of incomplete interaction records and two were also discarded because they used random devices (flipping coins, etc.) to select the representative.

Results

For the total sample of 66 subjects, data on time-talked were put into percentage form for each meeting. Those members who were chosen as representatives talked an average of 44.8% of the meeting time; nonrepresentatives talked an average of 27.6% of the time. This difference yields a *t* of 5.2, significant beyond the .001 level. The average number of DEF interactions per meeting was 12.6 for representatives and 6.1 for nonrepresentatives. However, the variances are heterogeneous in this case, so a median test was used, yielding a chi square of 8.79, significant beyond the .01 level. Thus, both on measures of amount of participation and DEF interaction, those members chosen as representatives were higher.

The time-talked measure correlated with DEF scores +.39, *p* less than .01. Although a moderate, positive relationship exists between participation and DEF, the two variables do not measure the same thing. When the DEF scores were put into percentage of total DEF per group, the correlation between DEF and time-talked is +.44, not significantly higher than the former correlation.

Since the measure of leadership was a discrete variable, point-biserial correlations were computed to determine the amount of relationship between leader choice and the two interaction measures. It was found that the time-talked measure correlated with leadership +.543; for DEF scores, the point-biserial correlation coefficient was +.527. Both of these correlations are significant beyond the .01 level.

A weighted combination of the two interaction variables was made up using the discriminant function (5, 210–211). The relative weights were .26 for time-talked and .16 for DEF. This combination yields the best discrimination between the distributions of scores for representatives versus nonrepresentatives. When composite scores were made up using these weights, they correlated with leadership +.632.

If the selection of leader is examined group by group, the predictive power of the interaction measures can be determined and compared. That person who talked the most was chosen as representative in 14 of the 22 groups. Since the chance level of selection is one out of three, this represents a highly significant ($\chi^2 = 9.15$, $p < .01$) prediction, if not too

reliable in a practical sense. In those groups where one person dominated the discussion, i.e., talked over 50% of the time ($N = 8$), time-talked accounts for the representative in seven of the eight cases.

In 14 of the 22 cases, the person with the highest DEF score was chosen as representative. In two of the negative cases, two members were tied in DEF score, and one of the two was chosen. There are 10 cases in which the highest DEF score does not coincide with the highest time-talked. Thus, it is apparent that the two variables do not account for the same thing.

If the dominant person is predicted in those cases in which one person talks over 50% of the time, and where this is not applicable, DEF scores are used, 16 of the 22 cases are accounted for. This method of combining the two variables yields the best practical prediction that can be made from the data.

Although one of the DEF categories may be more crucial than the others, none of the three was found to predict as well by itself as the combined score. It may be that there are particular kinds of groups or situations in which different types of integrative behaviors are particularly appropriate, but these refinements are not possible with the present data.

The other categories used in scoring the interaction yielded no significant differences between representatives and nonrepresentatives. These categories included agreement, positive social interaction, tension release, disagreement, and hostility.

Discussion

The major problem in this experiment is the isolation of variables that can be used to account for the perception of leadership by group members. The data show that amount of participation and DEF interaction are significantly related to leadership choice.

Participation and DEF interaction are neither independent nor highly correlated. They show a moderate, positive relationship. Conceptually, we might think of the group discussion situation in functional terms. The task set by the experimenter defines the goal of the group. Analytically, the process of reaching this goal can be broken down into several components, as is done by Bales (1). One set of problems involves the production of relevant ideas by the group members; a second set is concerned with the organization and integration of these ideas into a solution that is acceptable to the group. If it can be assumed that the perceptions of the group members of each other with respect to leadership center around the group's functioning, then it appears that the relationship between these two aspects of problem-solving is not a simple one. Within the area of perceived leadership are two subregions: amount of participation

and organizational behavior. In general, these two overlap partially, but it appears from our data that the relative importance and the amount of overlap varies from group to group. In some groups, it appears that any person who takes over the task and produces something will be chosen as leader. In other groups, ideas may be plentiful and the problem is to work out a mutually acceptable result. While this scheme makes difficult a simple prediction of leader choice, it appears to do more justice to the data than a monolithic concept of leadership in small groups.

Another way to state this interpretation is in terms of the differentiation of roles in small groups. Where one member talks a great deal, he is perceived as an appropriate representative, but in a more equal participation situation, group-centered, integrative behavior is relatively more important. In the latter case, persons are differentiated with respect to functioning in synthesizing the group. Even in this case, however, there is undoubtedly a minimum amount of participation necessary before the group-oriented behavior is noticed.

It must be remembered that these groups met only once and that the members were unacquainted with each other prior to the meeting. The representatives are leaders only in the narrow sense that they are empowered to act for the group. While these results may not pertain to a wide range of leadership situations, many short term, problem-solving groups are found that are similar to the experimental situation. Furthermore, the results with respect to DEF interaction seem to corroborate the findings of Carter *et al.* (4) regarding the types of interaction which are important in leader behavior. This confirmation includes Carter's negative findings also: the expression of agreement, "personal feelings," and disagreement did not reliably differentiate emergent leaders from nonleaders. In addition, the results on amount of participation tend to confirm the importance of this variable, as has been found by other experimenters.

In summary, the general picture of a small group leader which appears to be common to various researches shows a group member who tends to have a high rate of participation in the discussion; he is task-oriented, attempts to specify the problem, to suggest courses of action, to seek out the members' contributions, to integrate these and to propose solutions in the attempt to secure consensus in the group.

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28

Leader Behavior and Member Reaction in Three "Social Climates"

Ralph White and Ronald Lippitt

This investigation was carried out in two different parts: an exploratory experiment and a second more extensive research. The primary aim of the first study was to develop techniques for creating and describing the "social atmosphere" of children's clubs and for quantitatively recording the effects of varied social atmospheres upon group life and individual behavior. Two degrees of control of group life, labeled "democratic" and "authoritarian," were used as the experimental variables. The second study had a number of purposes. The one most relevant to this report is to examine the effects upon individual and group behavior of three variations in social atmosphere, labeled "democratic," "authoritarian," and "laissez-faire." The actual meaning of the adjectives used to label these social climates is necessarily somewhat different from the meanings attributed to them in political and economic discussions. The accompanying tabulation describes briefly the chief characteristics of these three treatment variations.

In the first study (Experiment I), the same leader met with two clubs. One group was led in a democratic manner, the other in an autocratic style. Both groups had five members, ten years of age. The behavior of the leader and the members was recorded by observers. A fuller description of the experimental plan for this investigation may be found in Lippitt (1).

In the second study (Experiment II), four groups of ten-year-old boys were used. These were also five-member clubs which met after school to engage in hobby activities. The groups were roughly equated on patterns of interpersonal relationships, intellectual, physical, and socio-economic status, and personality characteristics. Four adult leaders were trained to proficiency in the three leadership treatments. The leaders were shifted from club to club every six weeks, each one changing his leadership style at

Condensed from a fuller discussion contained in Chapters 3 and 6 of a forthcoming book by the same authors. Reprinted by permission of the authors.

AUTHORITARIAN	DEMOCRATIC	LAISSEZ-FAIRE
1. All determination of policy by the leader	1. All policies a matter of group discussion and decision, encouraged and assisted by the leader	1. Complete freedom for group or individual decision, with a minimum of leader participation
2. Techniques and activity steps dictated by the authority, one at a time, so that future steps were always uncertain to a large degree	2. Activity perspective gained during discussion period. General steps to group goal sketched, and when technical advice was needed, the leader suggested two or more alternative procedures from which choice could be made	2. Various materials supplied by the leader, who made it clear that he would supply information when asked. He took no other part in work discussion
3. The leader usually dictated the particular work task and work companion of each member	3. The members were free to work with whomever they chose, and the division of tasks was left up to the group	3. Complete nonparticipation of the leader
4. The dominator tended to be "personal" in his praise and criticism of the work of each member; remained aloof from active group participation except when demonstrating	4. The leader was "objective" or "fact-minded" in his praise and criticism, and tried to be a regular group member in spirit without doing too much of the work	4. Infrequent spontaneous comments on member activities unless questioned, and no attempt to appraise or regulate the course of events

the time of this transition. Thus, each club experienced each of the leadership styles under different leaders. All clubs met in the same place, and did the same activities with similar materials. The behavior of the leaders and the reactions of the boys were observed during every meeting. The members and their parents were also interviewed concerning their feelings about the club in the case of the boys, and the nature of parent-child relations in the case of the home visits. A more complete description of the experimental plan for the second study may be found in Lippitt and White (2).

In the following pages we shall first describe in some detail the nature of the leadership behavior typically used in each of the three leader treatments. The second part of this report describes the behavior of the members when under the direction of a leader using each of the variations.

Leader's Behavior

To some extent, the observation of what the leaders actually did was a process of discovery, both for the observer and for the leaders themselves. As we shall see, some of the statistically-significant differences in leaders'

behavior could not have been directly deduced from our central definitions, although they tend to be consistent with these role definitions. The adult who was faced with the constantly changing problems of leading a group of children found himself doing things which he could never have anticipated he would do. And the unanticipated things which the leader with the predetermined autocratic philosophy did were quite different from the things which he did in the same situations when he changed to the democratic role. The data described the different types of leader-behavior which resulted from the attempts at consistent application of the varying philosophies of leadership represented by the definitions of autocracy, democracy and laissez-faire.

Figure 40.1 presents a summary graph of the leader behavior in terms of the percentage of total behavior in each category. These percentages are based upon the grand total of behavior in a given style of leadership over six meetings. All differences concerning leadership behavior which are discussed are statistically significant at the 5% level of confidence or better.

1. *Giving Orders*

Statistically, the chief single characteristic of our autocratic leader role, as distinguished from both democracy and laissez-faire, is the giving of orders. Forty-five per cent of the verbal behavior of the autocrats, in contrast to 3% in democracy and 4% in laissez-faire, consisted of this simplest form of the imposition of one human will upon another. Many of these were direct orders or statements in the imperative form:

"Get your work aprons on." [1]
"All right, put your brush away."
"Each of you turn yours over and try on the back."

And many were indirect orders, not in the imperative form, but recognizable as autocratic if given in certain contexts and in certain tones of voice:

"Now we need some plaster."
"That should be about two-thirds full."
"Today we've got to paint and letter the sign."
"Before we start there's something we have to do. That's to make work aprons."

Such orders clearly correspond to the part of our strict experimental definition of autocratic leadership which calls for "high goal and means control."

[1] The illustrations used throughout this chapter are sample episodes or units of descriptions taken from the continuous research records of the group process.

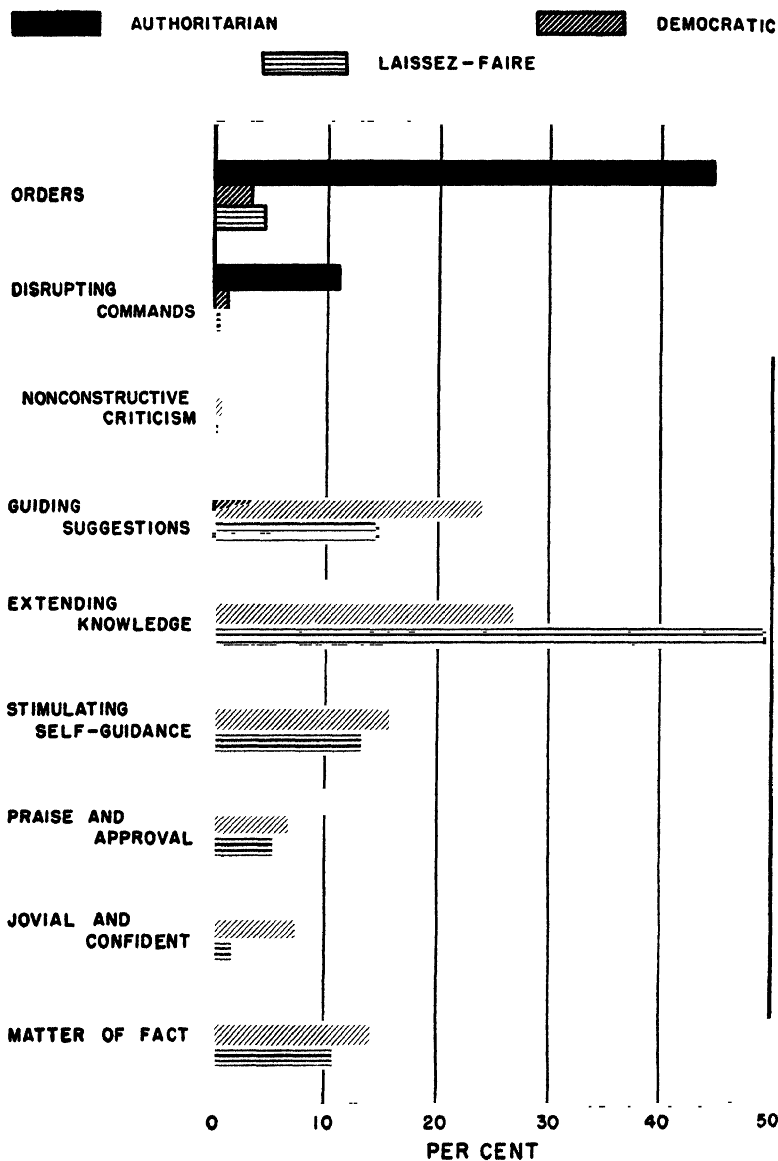


FIG. 40.1. Comparison of behavior of average authoritarian, democratic and laissez-faire leader.

2. *Disrupting Commands*

A more ambiguous criterion of means and end control is the giving of "disrupting commands"—commands which cut across an expressed wish or ongoing activity of a member of the group, and substitute for it some wish of the leader. Such commands represented 11% of the verbal behavior of our autocratic leaders, as contrasted to 1% or less for our democratic and laissez-faire leaders. For example:

"I want to saw."

"No, Bill, you and Hamil make another leg." Mr. Bohlen says he wants "two fellows." Fred volunteers, "Let Reilly and I do it." But Mr. Bohlen appoints two others: "I'm going to let Sam and Leonard do this." Mr. Bohlen consistently refuses to let Fred do what he wants to do—painting on the sign.

The data show that the laissez-faire leaders were consistent in restraining themselves from initiating goals and means.

3,4. *Non-Objective Criticism and Praise*

A third type of behavior which was more characteristic of our autocratic leaders was "non-objective criticism"—criticism which was adverse and personal in character and which did not point objectively toward improvement by suggesting a reason for failure or a way of doing the thing better. Such criticism constituted 5% of the leaders' behavior in our autocratic atmospheres and 1% in the democratic and laissez-faire atmospheres. For example:

"You're not making a sack, you're making an apron."

"No, you can't make it like that. That isn't a good job at all."

"Who was it left the tool box on the floor again?"

Praise was also found more often in the autocrats' behavior (11%) than in that of the democratic (7%) or laissez-faire (5%) leaders. For example:

Fred is doing a nice job of lettering, and Mr. Bohlen compliments him on it—the second compliment he has given him today. "That's the best side view there. But I think I want a front view."

(In democracy) Bill to Mr. Rankin: "Eddie really did a swell job on that, didn't he? I couldn't do as good a job as that."

Mr. Rankin: "Yeah, it's swell."

Different kinds of praise in different contexts can obviously (like different kinds of criticism) have widely different psychological meanings. Yet it is probably significant, from more than one standpoint, that *both* praise and criticism were especially characteristic of our autocratic leaders. From our present standpoint, however, the most interesting

implication of the large amount of both praise and criticism is that both suggest an emphasis on *personal evaluation from the leader's standpoint.* Both suggest an emphasis on a status-hierarchy, and both suggest that the leader is setting himself up as chief judge of the status and achievement of the members of the group.

5. *Guiding Suggestions*

We come now to the forms of leader-behavior that were more characteristic of democratic or of laissez-faire leadership than of autocratic. For example, as a direct counterpart of the order-giving which was characteristic of the autocratic style, we find "guiding suggestions" to be one of the two most frequent forms of verbal behavior on the part of democratic leaders. It represents 24% of the democratic leaders' behavior, as compared with 6% of the autocrats' behavior. The line between "guiding suggestions" and the indirect type of order-giving is, of course, somewhat difficult to draw. However, the reliability of making this distinction in the coding of the conversation was satisfactory. The way in which we defined "guiding suggestions" can be seen from the following examples, which were classified in this way:

"Did you ever try going the other way—with the grain?"

"That's a knife-sharpener so you can have sharp knives to carve wood with."

Bill holds up his model for Mr. Rankin to see. "That's pretty weak there." Mr. Rankin: "If you don't get it any thinner I think it will be all right."

Mr. Rankin sits down beside Van as he works. "That's good, Van, because if you leave as big a piece as that you can try again."

The distinguishing characteristic in each of these examples is that a given course of action is implicitly or explicitly related to one of the boy's *own* purposes. Very similar in psychological meaning is the *clarifying of alternatives,* between which the boys themselves are free to choose (which was included in this same category):

"Motion carried. Now the question is, who wants to be the G-man?" (All speak.) "Should we choose from everybody that wants to be, or just those that haven't had a chance yet?"

And similar, too, is the giving of suggestions by example rather than by precept:

Reilly discovers that Mr. Rankin is making papier-mâché, and stops throwing to join him. He tears up paper too, and so does Fred. Leonard stops throwing. The group is gathered around Mr. Rankin and is listening to him and paying attention.

Bill: "Let's get ready to go home."

Mr. Rankin (picking up a broom): "We don't have much cleaning up to do today."

It should be especially noticed that a very active readiness to give guiding suggestions at precisely those moments when they are appropriate and appreciated, and to point out the operating procedure which lies behind the efficient action, was in practice the chief single difference between the democratic and laissez-faire leaders. In laissez-faire such suggestions made up only 14% of the leader's verbal behavior, as compared with 24% in democracy and 6% in autocracy.

In other words, democracy (as distinguished from laissez-faire) did not imply freedom alone, i.e., a relatively passive "regard" for the child's welfare, in the sense that the child's desires were not needlessly thwarted. If either individual welfare or group achievement is to be fully attained, the democratic leader took the viewpoint that it is necessary to have also a very *active* respect for those individual desires in the sense of a constant active thinking about how they can best be realized. Only by such full participation in the life of the group can the leader really lead. For instance, the following are examples in which a boy wanted guidance and did not get it. In some situations exactly the same behavior by the leader —throwing back the question the boy asked—would be a constructive device for stimulating self-guidance. In these situations, however, it seemed to be merely a result of insensitivity to the boy's legitimate needs for goal or means suggestions:

Reilly: "Where can we put this up?"
Mr. Rankin: "Where would you like to put it up?"
Leonard: "How do you cut it?"
Mr. Rankin: "What do you think? Cut it in the right shape. . . ."

But, at the other extreme, the democratic leader had to avoid overcomplicated suggestions, such as the following, both of which are double-barreled and at least slightly confusing:

"Who wants to help who to get things finished up?"

"Have you been thinking about a G-man Club? Do you want a meeting now, fellows?"

The effective use of guiding suggestions seems to depend on timing. The democratic leader had to have a keen sense of awareness of the shifting momentary needs and interests of the boys so that he could make his suggestions at just the moments when they fitted into those interests.

6. *Giving Information*

Another major activity of the democratic leader was simply giving information, or extending the knowledge of the members of his group. This constituted 27% of the democratic leaders' behavior, and 15% of the autocratic leaders'. (In laissez-faire it was 49%, which is natural in view

of the fact that the laissez-faire leaders' role was explicitly confined very largely to the giving of technical information when asked for it.) Actually the amount of technical information given by the three leader types was not significantly different, even though the proportion was so much greater in laissez-faire. Here are some typical examples of information-giving:

Finn (holding up orangewood stick): "What's this for?"

Mr. Rankin: "That's an orangewood stick, and the flat end is for smoothing down this way." (Demonstrates.) "This is more curved here, and you can get a smoother tip of soap because it's narrower than this."

There is a dispute between the two groups about the ages of the knives. . . . Reilly, Sam and Fred listen to Mr. Rowe talk about the ages of the knives. They are all very much interested.

(In laissez-faire) Finn (very plaintively): "Why can't we have a crime?"

Mr. Davis: "I could have a crime for you next week if you wanted me to."

One meaning of information-giving, as compared with either orders or guiding suggestions, is that there is almost no chance of its being a form of social influence or pressure. The information is simply there. The boy can take it or leave it, use it or not use it, depending on his needs at the moment.

7. *Stimulating Self-Direction*

Less frequent numerically is a group of leader-behaviors which we have called "stimulating self-direction." This type of behavior was fairly frequent in democracy and almost nonexistent in autocracy; the percentages were, respectively, 16 and 1.2. Although this made up 13% of the behavior of the laissez-faire leaders, this only represented an average of 30 such acts per meeting, as compared with 59 by democratic leaders. The meaning also tended to be quite different. In laissez-faire this type of leadership act tended to be a throwing back of responsibility on the individual member. In the democratic style it was more frequently a teaching of the total group to learn to depend on itself as a group.

One way of stimulating democratic self-direction in setting new goals and choosing means is to inculcate the democratic procedure directly: group decision, majority vote, free discussion with an opportunity for every interested person to have his say, secret ballot when appropriate, delegation of special tasks to committees, minority acceptance of majority decisions, etc. For example:

Finn: "Guess I'll change the name of our club."

Bill: "No, it's still the Law and Order Patrol."

Mr. Rankin: "If the group wants to change the name, they can—if a majority wants."

Bill: "Eddie should be captain and Van should be a lieutenant-assistant."

Van: "Hey, that's lower than I am now, and I got a high score!"

Mr. Rankin: "In an army, the general decides the promotions; but here, even if it is organized like an army, it seems to me the group ought to decide who should get the promotion."

Bill: "Now you stay out of it and we three will vote." Mr. Rankin steps in to confer with Bill about taking a vote. He gives him a formal wording. "All in favor say aye, opposed, no," etc. (Bill is especially keen on formality and "having things regular.")

Finn votes for adjournment, and the motion passes. Bill starts to ignore the vote and keep on with the discussion. Mr. Rankin: "All right we don't have any meeting now if the majority votes to adjourn."

It will be noticed that in some of the above examples the role of the democratic adult leader is chiefly one of supporting or bringing to clear expression the feeling of the majority. He is a catalyst, releasing energies that already exist in the group. This was done formally by insisting on a majority when dispute had arisen, and backing up the majority with his own prestige. It was also done informally by simply listening to and drawing out the less articulate or less vociferous members of the group. It is also sometimes necessary to support a minority, especially if it is opposed by an even smaller minority. This occurred, for instance, when Finn and Hamil were refusing to accept the arbitrary leadership of Bill. The other two members did not take part in this little contest so that it was actually a conflict of two against one.

Bill: "It's time for our meeting. The second half of our meeting will come to order. Come on boys."

Hamil: "That's what you think." He and Finn go just outside the burlap curtain surrounding the enclosure, but lift the curtain; it is cooler outside because the moving-picture lights make the enclosure itself very warm.

Finn: "We'll just listen from out here." Bill doesn't get the response he wants and pouts while he takes up his whittling again.

Mr. Rankin: "I shouldn't think a good chairman would whittle while the meeting was going on."

Bill: "Well, I can't get any of the guys to come." Mr. Rankin goes over to the other two and holds up the curtain. Eddie and Van go too so that four of the five boys are gathered at the edge of the enclosure.

Mr. Rankin: "The meeting is going on over here." (A satisfactory meeting is held, with Bill fully participating, as well as Hamil and Finn.)

The commonest form of stimulating self-direction, however, was simply to follow up a particular boy's ideas, encouraging him to elaborate them and think them through:

Mr. Rowe: "Let's all sit down and talk it over. Sam suggested glass painting. How does it go, Sam?"

Sam: "Get a picture under a piece of glass."

Mr. Rowe: "How would it be if I got a big piece of glass and a big painting? Does the paint come in tubes?"

Sam: "The stuff in bottles is better."
Mr. Rowe: "Would everybody like to do it?"
Reilly: "I'd like to do it."
Lyman: "I think I'd like to do it."
Van (in a doubtful tone): "I was thinking of a canoe [for soap carving]."
Mr. Rankin: "I think a canoe is probably the best idea. Can you see there [picture of canoe model] how almost straight it is for a distance in the middle?"

8. *"Jovial" and "Confiding" Behavior*

The last type of conversation that was measured and that significantly distinguished the democratic club atmosphere from the other two is one which, for the want of a better term, has been characterized by the two terms "jovial" and "confiding." It represents the purely social aspect of the leader's behavior and was far more characteristic of our democratic situation than of either autocracy or laissez-faire (8% as compared with less than 1% in autocracy and in laissez-faire). For example:

Fred talks and laughs with Mr. Rowe—far different from his behavior with Mr. Bohlen.

There is a very nice relationship between Mr. Rowe and the group. . . . He seems to be having the most fun of all. . . .

(The acute conflict between Fred and Mr. Bohlen is still fresh in everybody's mind; and on this day Fred is absent. The following topic of conversation is therefore a natural one.) Mr. Rowe: "Does Fred get into much trouble with the teacher?"
Sam says, "I'll say!" and Lyman adds, "He got sent out of the room two times. He always does something."

This is the clearest instance of a type of behavior which was not consciously planned, but which developed as sort of a by-product of the democratic leader's total relationship to his group, usually by the initiative of group members. It has nothing directly to do with freedom or lack of freedom, but it obviously does have something to do with openness of communication which develops as a result of the relationship created by the other types of leadership behavior described above.

This completes our list of the types of conversation which were statistically analyzed and which clearly differentiated one or more of the three atmospheres. A number of incidental observations can be added, however, which were not statistically analyzed, but which help to round out the picture.

Democratic Criticism and Praise

Although it did not occur frequently enough for statistical comparison, the observer noted that the democratic leaders tended to use praise and

criticism in a different way from the autocratic leaders. The democratic leaders recognized that "training in procedures" seemed to mean (*a*) helping individuals to learn the criteria and methods for evaluating their own work without dependence on the adult as well as (*b*) helping the group to learn the methods of mutual support and cooperative operation as a group. This first type of training we find exemplified in such illustrations as:

Mr. Rankin: "That's good, ________, because if you leave as big a piece [of soap during soap-carving period] as that you can try again [if the first try fails]."

Leader: "I think that's going to be pretty wobbly [piece of box furniture]. Can you guess why I think so?"

Boy: "Maybe because there are so many bent nails and none that go through."

By this type of praise and criticism, the democratic leaders attempted to extend their assigned function of teaching a group procedure for setting goals and means to teaching of criteria and methods for *evaluating* goals and means. This seemed to be a natural part of the same leadership role.

Equalitarian Behavior

It may be worth while also to cull a number of illustrations not falling under any one topic that has already been discussed, but illustrating again, in a variety of ways, some additional implications of respect for own member's goals, and means which seem to flow from the leadership patterns that were defined for the leaders. There are, for instance, some egotistical uses of the pronoun "I" by autocratic leaders which are clearly lacking in that sort of respect:

"I'm going to pick out the best one when you get done."

"Guess you'll have to put some more powder in that. I don't like it yet."

By contrast, the democratic leaders often showed equalitarian or even self-effacing behavior, and an absence of concern about their status and dignity. They took off their coats, they sat or squatted instead of standing, they worked just as the boys did and showed that they were enjoying the work just as the boys did. Other illustrations:

Mr. Rowe subordinates himself to the newly elected boy-leader. "What should I do for cleanup, Sam?"

Mr. Rankin, on the first day of democracy in the Law and Order Patrol (after a period of laissez-faire) finds Bill in a position of temporarily revived leadership. He does not challenge this leadership, but helps Bill when he can do so without antagonizing the others.

Bill is administering a test which he has carefully made up, on crime-detection agencies in the community, safety rules, etc. Mr. Rankin asks: "Are you testing me too?"

Bill: "No."
Mr. Rankin (with a smile): "I'd probably get the worst grade."

Observer writes: "Another characteristic of the democratic behavior of Rankin is his emotional expressions with the boys—'Oh,' 'Aha'—and his going thoughtfully into everything the children think they want to do."

On the other hand, the democratic leaders sometimes did not hesitate to accept delegated authority when it was unequivocally handed to them. Mr. Rankin suggests a committee to make up the crime, but the group wants to leave it to him this next time. He agrees.

In other words, the democratic leader's lack of concern about his own dignity was not a blind or compulsive self-effacement; it was a sensitive awareness of and respect for the status needs (own social goals) of the boys in the group as well as of the various other social needs that they might have in this situation.

Role-Changes by the Same Person

Did the four leaders in this experiment actually change their behavior to be consistent with the leadership policy they were supposed to be representing, or did they primarily "keep on being like themselves" in each of the three clubs they led? The data clearly reveal that each leader was more like the others in the same role than he was like himself from one role to another. The interviews with each boy, in which the boy compared his leaders, also indicate that the boys were actually reacting to these behavioral differences rather than to other unchanging aspects of the leaders' personalities. Certainly there must have been a core of enduring characteristics which each individual leader took with him from one club to the other. These characteristics probably exerted some influence on the perceptions and reactions of the club members, but these were evidently minor or irrelevant as far as the leader effect on the club life was concerned in the dimensions we have studied.

Summary of Leader Behavior

We have reviewed the statistical analysis of leader behavior, with illustrations of leader behavior taken from the club records. It is clear that the leaders did behave differently in carrying out their three types of role-assignment. These differences seem to represent consistent behavioral definitions of the three types of leadership policy which we want to compare.

Major Differences in Boys' Behavior

The glimpses given above may have conveyed some of the "feel" of the atmosphere resulting from the three types of leadership. We will now

present the results of the experiments more fully and systematically, in terms of the chief statistical differences between the boys' behavior under autocratic, democratic, and laissez-faire types of leadership. Summary graphs will be found at the end of the chapter. The findings can be grouped under six major generalizations, which are discussed in the remainder of this chapter.

Laissez-faire Was Not the Same as Democracy

Laissez-faire was less organized, less efficient, and definitely less satisfying than democracy to the boys themselves. Since there is a general tendency to attribute to democracy certain results which are actually results of laissez-faire, it is necessary to make this distinction very clearly before going on to any further thinking about differences between democracy and autocracy. The boys' behavior in laissez-faire differed from their behavior in democracy in the following ways:

1. Less work was done, and poorer work. In democracy, the time periods during which there was general absorption in constructive activity, or psychological involvement in the work situation, represented 50% of the total time; in laissez-faire, 33%. In democracy, the time periods of general out-and-out loafing constituted 0.2% of the total time; in laissez-faire, 5%. And in *quality* of work accomplished, the difference was considerably greater than these figures indicate. The lack of active guiding suggestions in laissez-faire often resulted in disorganization and in failure and setbacks in work, which were discouraging and exasperating. Some outright aggression can be directly attributed to such work failures, as well as much loss of interest in the job that was being done. For instance:

Eddie and Bill have mixed the plaster-of-Paris before getting the sand and making a print. Mr. Davis doesn't step in to tell them it will soon get hard. Van tries the plaster-of-Paris and finds it quite stiff. Eddie, Bill, and Van finish a handprint and go to pour the plaster-of-Paris, but find it has hardened in the can. Bill pounds at it. Eddie stamps in the sand with his shoe, spoiling the print they had prepared. Finn and Hamil finish some new guns. Everybody is now milling around idly except Bill, who keeps on trying to get the hard plaster-of-Paris out of the can. Horseplay is about to begin.

Fred breaks his cast, is discouraged, goes on and tears up the whole thing. (Later in the same hour, he was the leader in destroying the work of the "Monday gang.")

Fred watches, sitting on a stool he made. A leg falls off. He breaks up the rest of it.

2. They played more. Play-minded conversation with other boys was more than 2.5 times as frequent in laissez-faire (33 as compared with 13 in

democracy; significant at the 1% level). Pure silliness was included in this category. For instance:

Leonard (hearing the term "orange sticks"): "Orange sticks—pick up sticks."
Ray: "Hooray, hooray—I-O-W-A!"

Democracy Can Be Efficient

Since arguments for autocracy often take the form of claiming that democracy is not efficient enough to accomplish a certain end (such as winning a war, reducing production costs, or educating a child in necessary basic skills), it is of interest to consider the degree of efficiency of the democratic groups in our experiments. Did these groups achieve the ends the boys themselves wanted to achieve?

On the whole, they did. The question is not a simple one, since the boys did not want work achievement to the exclusion of other goals. (And in this respect, of course, the situation was also not comparable with the many situations in which society demands that a certain end be accomplished by methods that are inherently distasteful.) Our clubs were recreational clubs. They were "to have fun," and the boys came to them expecting to have fun through sociability, and probably through occasional good-natured horseplay, as well as through carpentry, painting, and organized crime-games. A respect for the boys' own legitimate goals would perhaps necessitate evaluating "efficiency" as much in terms of the achievement of these social goals as in terms of the achievement of work goals. And certainly from this combined standpoint democracy was decidedly more "efficient" than either autocracy or laissez-faire, since it achieved simultaneously both goals, while autocracy, in the main, achieved only work goals, and laissez-faire achieved (if anything) only social goals. But even from the narrow standpoint of work goals alone, the evidence suggests that in our situation the democratic groups were about *as* efficient as the autocratic ones.

This conclusion is based upon an over-all impression of the observers and experimenters. It is also based on a balancing of certain factors of efficiency which appeared to be more prominent in autocracy and others which appeared to be more prominent in democracy. On the one hand, there was a large quantity of work done in autocracy—or at least, in those autocratic groups in which the reaction to autocracy was a submissive one. In such groups the time periods of general absorption in work constituted 74% of the total time, as compared with 50% in democracy, and 52% in the one instance (in the second experiment) of an aggressive group reaction to autocracy. On the other hand, the amount of genuine interest in work was unquestionably higher in democracy. This was shown by a somewhat larger amount of "work-minded" conversation

in democracy (63 such remarks per child as compared with 53 in the aggressive reaction to autocracy and 52 in the submissive reaction). This difference is not significant at the 1% level, but it does strongly suggest that work-mindedness was at least *as* great in democracy as in autocracy. Some illustrations of "work-minded" remarks:

"Let's see, who's got the saw?"

"I'm going to get a chisel to chisel that out with."

"How come some of these pieces are bigger than others?"
"Because they belong to the end of the wing out here."
"I guess all these pieces go together."
"Well this is supposed to stand up straight."

More significantly, the difference in amount of genuine, spontaneous work interest was shown by the difference in the boys' behavior *when the adult leader left the room.* Typically, the boys in democracy kept right on working while their leader was present or not, while in autocracy when the leader left, the boys stopped working as if glad to be relieved of a task which they "had" to do. In democracy there was a very slight drop in proportion of general work involvement during the leader-out periods —from 50% to 46%. On the other hand, in the one group which reacted aggressively to autocratic leadership, the drop in work involvement was from 52% to 16%, and in the three groups reacting submissively it was from 74% to 29%.

There was, finally, an impression on the part of the experimenters that both work and play showed a higher level of *originality* or creative thinking in the democracies than under either of the other types of leadership. There was a larger amount of creative thinking about the work in progress than in autocracy, and it was more sustained and practical than in laissez-faire.

Autocracy Can Create Much Hostility and Aggression, Including Aggression against Scapegoats

The word "can" is important here, because this reaction did not always occur. It occurred to a very marked degree in Experiment I, and to some degree in one of the four groups that took part in Experiment II; but the other three groups in Experiment II showed, instead, a "submissive" reaction in which there was significantly *less* overt aggression than in democracy.

The clearest evidence comes from Experiment I. For example:

1. "Dominating ascendance" occurred 392 times in the autocratic group and only 81 times in the democratic group. The category "ascendance" showed no significant difference between the groups (63% of all

child-to-child behavior in autocracy, and almost as much—57%—in democracy). But the reason for this apparent similarity was that the term "ascendance" was so broad as to be somewhat meaningless psychologically. When three kinds of ascendance were distinguished, "dominating," "objective," and "friendly" ascendance, it was found that dominating ascendance was highly characteristic of the autocratic group, while objective and friendly ascendance were characteristic of the democratic group. Some illustrations of dominating ascendance:

"Shut up."

Two children look in, and Sarah and Jack repulse them with comments of "not wanted."

"You put them away; you dumped them."

"Give me some of that paint." (Remarks of this sort are classified as dominating or objective, depending upon context and upon tone of voice. In this case it was classed as dominating.)

"Get a pan of water, Jack."
"Why don't you get it yourself?"

Friendly ascendance, on the other hand, occurred 24 times in the autocratic group and 230 times in the democratic group:

"Let's do coloring."

"Carry the bottles over there."

"You've got to get all the cracks filled in."

"Better fill in your side there."

2. Definite hostility occurred 186 times in the autocratic group and only 6 times in the democratic group. It represented 18% of all the recorded social interactions in the autocratic group, and less than 1% of all the interactions in the democratic group. (This category is included in the larger category of "dominating ascendance.") Some illustrations:

"You guys haven't got nothing done yet."

"Hey, you, don't throw water on my hair."

"Look out, Tom, quit throwing things."

"Don't start crabbing. I wouldn't talk too much yourself."

"Oh God, Tom, don't you know anything?"

3. Aggressive demands for attention occurred 39 times in the autocratic group and 3 times in the democratic group. For example:

Joe (in a loud voice): "I guess this is a mighty fine job I'm doing!"

Tom: "I'm a lot smarter than you are. Boy-oh-boy, can I ever brag."
Harry: "I'll say you can."

Joe: "Sure, I've got three radios; I ought to know."
All the others: "You have not!"
Joe: "Oh yes I have."

4. Destruction of own property was conspicuous at the end of the meeting of the autocratic group, and did not occur at all in the democratic group:

Peculiar actions begin after the leader (in the autocratic group) announces that there will be no more meetings. The leader asks Harry and Jack to put more paper on the floor to work on. They put it down and then run and jump on it time and again in a wild manner. The masks are divided out as had been decided by the voting, and Jack immediately begins to throw his around violently, pretending to jump on it. He throws it down again and again, laughing. Ray wants to know if it won't break, then starts to throw his down too. Later Jack and Harry chase each other around the room wildly with streamers of toweling.

5. Scapegoat behavior was conspicuous in the autocratic group, and scarcely occurred at all in the democratic group. "Scapegoat behavior" is here defined as the concentration or polarization of group aggression against a single "innocent" object, i.e., a person or group which does not actually threaten or frustrate the group to an extent comparable with the aggression that occurs. Presumably in this case the autocratic leader was the source of most of the frustration in the autocratic group, yet only a small part of the resulting aggression was directed against him; most of it was directed by the club members against each other. It could therefore be called "displaced aggression." When this displaced aggression is concentrated against a single person, as occurred twice during the course of the meetings of the autocratic group in Experiment I, it can be called "scapegoat behavior."

Autocracy Can Create Discontent That Does Not Appear on the Surface

Less dramatic but more fundamental than the question of aggression is the question of total need satisfaction. Under which major type of leadership is there likely to be more satisfaction of the boys' own needs, and why?

The answer is far from simple. There is no reason to think that democracy is necessarily superior from the standpoint of immediate personal satisfaction. It is a well-established fact that autocracy is often satisfying to some of the needs—the regressive needs, perhaps—of the ruled as well as the rulers. There can be satisfactions in passivity, satisfactions in not having to think, satisfactions in identifying (on an irreal level) with a strong, dominating leader image. On the other hand, it is also obvious, and needs no proof, that autocracy is always frustrating insofar as it imposes barriers to the satisfaction of individual needs. The real

problem, then, is to pin down and describe scientifically the specific factors that determine whether, in a given case, the regressive need satisfactions or the frustrations will predominate. Some of the evidence bearing on this point has already been presented. The aggression shown in some of the autocratic groups points to probable frustration—if the frustration-aggression hypothesis has any weight. Also, the lack of spontaneous work interest in autocracy is a relevant fact. If the boys stopped work when the autocrat left the room, it was an indication that they had not been particularly enjoying it when he was in the room. It meant that the work had become merely a task, rather than something to be done with spontaneous zest and enjoyment. In this section, we shall present additional evidence, and in doing so we shall focus on an aspect of the matter which has not hitherto been emphasized: the fact that much of the discontent which existed was not immediately obvious.

The deceptiveness of autocracy in this respect is a fact that needs more emphasis than it has usually received. For example, out of our six autocratic setups (one in Experiment I, and five in Experiment II), five were in some degree deceptive, insofar as the discontent which existed did not show itself to any appreciable extent in protests to the autocrat himself. The evidence that latent discontent did exist in at least some of the other five autocratic situations can be summarized as follows:

1. Four boys actually dropped out, and all of them did so during those autocratic club periods in which overt rebellion did not occur.

2. Of 20 boys who made direct comparisons between their autocratic and democratic leaders, 19 preferred the democratic leader. These comparisons were, of course, made in private interviews with a third person who was not identified in any way with the leader who was being explicitly or implicitly criticized. It was also noticeable that most of the criticisms that did occur were mild and qualified. Nevertheless, when forced to make a choice, their vote was almost unanimous.

3. Discontent in autocracy was occasionally expressed even during the meetings themselves. In Experiment II, the average number of discontented remarks to other boys was 4.4 per meeting in autocracy (aggressive reaction), 2.1 in autocracy (submissive reaction), 3.1 in laissez-faire, and only 0.8 in democracy. The difference between democracy and the submissive reaction to autocracy is significant at the 1% level. Similar, but not as significant statistically, is the difference in number of expressions of discontent directly to the adult leader. In autocracy (aggressive reaction) these averaged 11.1 per meeting; in autocracy (submissive reaction) the average was 2.0; it was 1.5 in laissez-faire and again only 0.8 in democracy. In this case, the difference between democracy and the submissive reaction to autocracy is significant at only the 10% level.

4. "Release" behavior on the day of transition to a freer atmosphere

suggested the presence of previous frustration. There were three occasions when a group which had shown the submissive reaction to autocracy came out of this somewhat repressive atmosphere into the freer atmosphere of democracy or laissez-faire. In two of these cases, the first day of freedom was marked by an especially large amount of aggressive behavior (much of it, of course, playful in character). The first explanation that suggests itself is that on these days the boys were "blowing off steam"; discontent in autocracy had led to bottled-up tension, and when the lid was off, the tension discharged itself in a more or less explosive way. Actually, the explanation is probably somewhat more complex than this. On the first day of permissive leadership, the boys apparently still had the status needs and self-assertive impulses which were frustrated by autocracy, but they no longer felt any great need to inhibit these impulses. They were in the same general situation so that they were reminded of their former frustration, and yet their new freedom contrasted with the old restraint in such a way as to make itself prominent in the psychological field, as if each boy had said to himself, "Aha! *Now* I can do what I've been wanting to do in this club!" On later days the thrill of new-found freedom apparently wore off, and, in addition, the spontaneous interest in work which tended to develop in democracy was stronger on later days than it was at first.

There Was More Dependence and Less Individuality in Autocracy

1. In autocracy, more of the boys' behavior was classified as "submissive" or "dependent." In Experiment I, the number of "submissive" actions toward the adult leader was 256 in autocracy and 134 in democracy. In Experiment II, the number of "dependent" remarks to the leader by each boy averaged 14 in the aggressive reaction to autocracy, 16 in the submissive reaction, 4 in laissez-faire, and 6 in democracy. The difference between democracy and either type of autocracy is significant at the 1% level. Some illustrations:

"Is this O.K.?"

Bill starts to hold up his hand for advice. "Mr. Rowe shall I paint the bottom of this or not?"

2. Conversation in autocracy was less varied—more confined to the immediate club situation. In Experiment II, the amount of "out-of-field" conversation was significantly less in the submissive reaction to autocracy than in any of the other three group atmospheres. The figures: democracy 14, laissez-faire 13, aggressive reaction to autocracy 12, and submissive reaction 5. The difference between the last figure and any of the other three is significant at the 1% level. Some illustrations of what was called "out-of-field" conversation:

Bill: "Some day I'm going to get me a job at the glass works."
Van: "I wish I could get a job."
Bill: "You should get out and get a job in the newspaper and then work yourself up. That's what I did." (He sells papers on the corner.) "And maybe someday you'll be able to get a good job."

Big conversation about pussy willows; then about places where the boys had traveled.

Leonard: "I saw your girl's picture in the paper, in the Press Citizen. She's fat, boy."
Reilly: "She's not fat, boy. You probably didn't see her."
Leonard: "She is fat. She's not slender."

No figures are available for Experiment I, but the impression of the experimenter is that the same difference held good there also.

3. In the submissive reaction to autocracy there was an absolute (though not a relative) reduction in individual differences in the various behavior categories. The essential fact here is that the total volume of conversation was significantly lowered in the submissive reaction to autocracy, even though the adult did not tell the boys to "keep still" or directly discouraged sociability in any way. The mean total amount of recorded child-to-child conversation was 298 in laissez-faire, 220 in democracy, 200 in the aggressive reaction to autocracy, and, in the submissive reaction to autocracy, only 126. The difference between this and the figure for democracy is significant at the 1% level. In other words, there was a sort of general subduedness in the atmosphere, the animal spirits of the boys were damped down, and they kept rather soberly at work. With this reduction in total amount, the range of individual differences in amount of "aggressiveness," or "demands for attention," was correspondingly reduced. Whether this absolute reduction in individual differences has any psychological significance, apart from the general reduction of volume with which it coincided, is a question which we prefer to leave open.

There Was More Group-mindedness and More Friendliness in Democracy

1. The pronoun "I" was used less frequently. One highly objective approach to the problem of group-mindedness is simply to count the number of times that the members of the group use the pronoun *I* (or *me*, or *mine*) in comparison with the number of times that they use the pronoun *we* (or *us*, or *ours*). Which is more frequent, I-centered remarks such as "I want this," or we-centered remarks such as "We need that"? In Experiment I, this appeared to be a very promising index. In the autocratic group the proportion of singular pronouns in the total of all first person pronouns was 82%, and in the democratic group only 64%. In Experi-

ment II, however, although there was some difference in the same direction, it was not statistically significant.

2. Spontaneous subgroups were larger. In Experiment I, a count was made of the frequency of subgroups representing the highest amount of unity possible in a five-person group (5 and 4–1) and the lowest possible amount of unity (2–1–1–1 and 1–1–1–1–1). The high-unity structures occurred 14 times in the autocratic group and 41 times in the democratic group, while the low-unity structures occurred 41 times in the autocratic group and 19 times in the democratic group. This difference is in spite of, rather than because of, the direct influence of the leader; he exerted his influence in the autocratic group much more often in the direction of higher group unity than in the opposite direction. But in autocracy his direct influence was more than balanced by a strong spontaneous tendency to group fragmentation or disintegration. (In Experiment II, this type of data was not obtained.)

3. "Group-minded" remarks were much more frequent. The "We/I ratio" is atomistic insofar as it deals with words out of context. The word *I*, for instance, may be used in the sentence, "I think we'd better pour in the water now." Here it does not indicate egotism or individualistic competition; in its context it is clearly subordinate to a wholly group-minded idea. More significant than the We/I ratio, therefore, is the number of remarks which were classified as "group-minded." This was done only in Experiment II. The results showed that the highest percentage of group-minded remarks was in laissez-faire—which is parodoxical, in view of the low amount of effective group cooperation in laissez-faire. But an analysis of the actual remarks showed that many of them expressed not the existence of group unity but a *desire* for it:

"Hey, how about us having a meeting?"
"Well, we have to do something."
"Now if we just had a club. . . ."

On the other hand, the contrast between democracy and both forms of autocracy seems to show a genuine difference in effective group-mindedness. The figures are: democracy 18, aggressive reaction to autocracy 7, submissive reaction to autocracy 4. The difference between democracy and each of the others is significant at the 1% level. Some illustrations:

Finn: "I wish that guy [the 'hostile stranger'] would stop telling us stuff and tearing down our work. We won't be able to finish it."

Eddie: "We're going to vote about it."

Finn: "We can't leave it here. It's our last day. We're all in charge of this airplane from now on."

Leonard: "I'll take it home and hang it up."

Reilly: "You won't if the club doesn't say so."

4. "Friendly" remarks were slightly more frequent. In Experiment I, as we have already noted, "friendly ascendance" occurred 24 times in the autocratic group and 34 times in the democratic group. Similarly, "submissive" behavior of one child to another (which might better have been called "agreeable" or "cooperative" behavior in many cases) occurred 120 times in autocracy and 188 times in democracy. The category of "friendly" behavior was not used in the analysis.

In Experiment II, the category of "friendly" was used, and a slight difference was found in favor of democracy as compared with either form of autocracy, but it was not statistically significant. The figures were: democracy 26, submissive reaction to autocracy 17. The difference between democracy and the submissive reaction was significant at only the 5% level, and the difference between democracy and the other two atmospheres does not even reach the 5% level of significance. It should also be noted that the proportion of friendliness in the total of all conversation was actually larger in the submissive reaction to autocracy than it was in democracy.

How can we account for this surprisingly large amount of mutual friendliness in the submissive reaction to autocracy? It seems likely that the unfriendliness which would naturally result from frustration is here counterbalanced by one or both of two factors: the general atmosphere of moral goodness which the presence of the leader seems to have inculcated (the boys were "on their good behavior"), and perhaps also a sort of drawing-together of the group because of the feeling that "we're all in the same boat." The common experience of being subjected to the same frustrating experience may have created a sort of feeling of comradeship similar to that which has often been described as existing in army groups subjected to a common danger and a common discipline. In our experiments this did not result in any responsible type of group cooperativeness ("group-minded" remarks) but it does seem to have resulted in a certain amount of individual friendliness ("friendly" remarks). Many joking and half-joking remarks are included. For instance:

Finn: "Well, so long, I'm going to get my hair cut."
Van: "Look at Finn, he's going to get his head cut off."

"Now, my fine feathered friend, does this suit you O.K.?" (Friendliness to individual in outgroup.) Finn is over near the box, and Rudy (in the other group) holds up the work he is doing in a friendly manner for Finn to see.
Finn: "What is it?"
Rudy: "It's a tin can thing."

5. Mutual praise was more frequent. In Experiment I there were three instances of child-to-child praise in the autocratic group and 16 in the democratic group. In Experiment II praise was not counted as a separate category, but was included in the category of "friendliness." Some instances of its occurrence under democratic leadership:

Finn: "Well, nice going, Bill—such an idea. You could take a bit more out of that one." (Bill is Finn's archenemy, but Finn is also changeable, and he is now in the best of spirits.)

Bill (reciprocating, a minute or two later): "Oh, that's good Finn. That's a good idea. Mine's too weak."

Bill: "Oh, Van, that's coming good."

Bill (to Mr. Rankin): "Eddie really did a swell job on that, didn't he? I couldn't do as good as that."

6. Friendly playfulness was more frequent. In number of "play-minded" remarks the figures for Experiment II were: laissez-faire 33, democracy 13, submissive reaction to autocracy 8, and aggressive reaction to autocracy 3. The difference between democracy and the submissive reaction is significant at only the 5% level. Here again autocracy may have brought out a paradoxical type of irresponsible we-mindedness. (Illustrations of "play-mindedness" have already been given in differentiating laissez-faire from democracy.)

7. There was more readiness to share group property. This was shown most conspicuously in Experiment I. At the end of the meeting series, each of the two groups was asked to vote, with individual secret ballot, on the question, "What would you like to have done with the masks?" In the autocratic group (in which each child had already identified with one mask), three out of four gave wholly "individualistic" answers: "Give us our masks," and "Let me have mine." In the democratic group, not one of the five regular members gave a completely individualistic answer.

Summary

A bird's-eye view of the more important results of Experiment II is given in Figures 40.2 and 40.3, which represent, respectively, the boys' behavior toward their leader and toward each other. The chief differences to be noted here are: (*a*) the large number of leader-dependent actions in both reactions to autocracy; (*b*) the large amounts of critical discontent and of aggressive behavior in the aggressive reaction to autocracy; (*c*) the frequency of "friendly, confiding" conversation and of group-minded suggestions in democracy; and (*d*) the contrast between democracy and laissez-faire in work-minded conversation.

Here the following differences should be noticed: (*a*) the large difference between the two reactions to autocracy in amount of aggressive behavior, and the intermediate position of democracy and laissez-faire in this respect; (*b*) the generally subdued atmosphere in the submissive reaction to autocracy, as shown by the small absolute totals of aggressive behavior, attention demands, group-minded suggestions, out-of-club-field conversa-

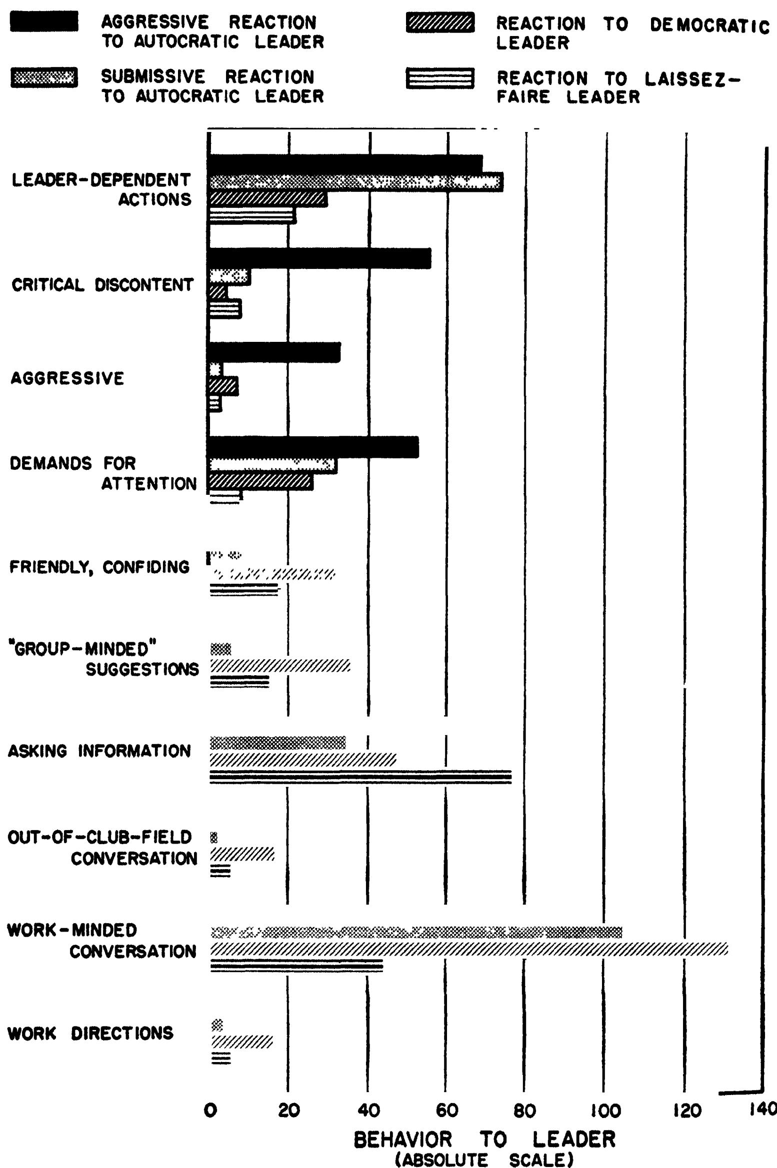


FIG. 40.2. Four patterns of child-to-leader relationship.

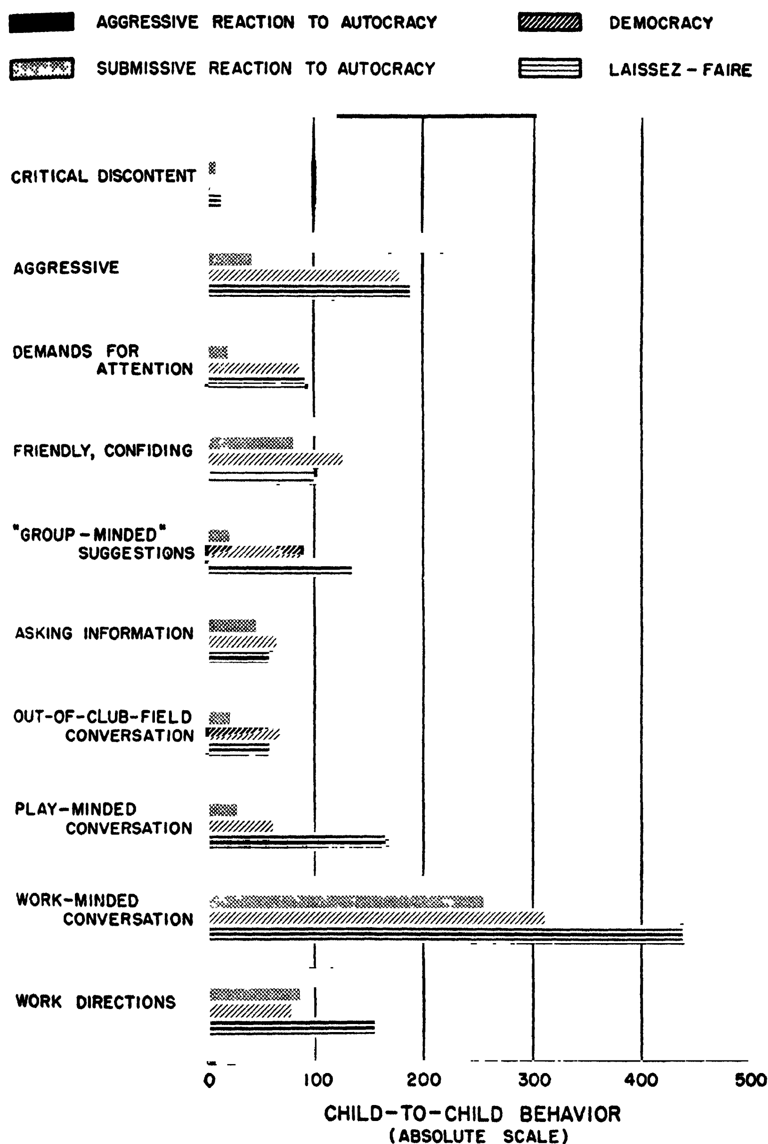


FIG. 40.3. Four patterns of child-to-child relationship.

tion, and play-minded remarks; (*c*) the small proportion of group-minded suggestions in both reactions to autocracy; and (*d*) the small amount of play-minded conversation in both reactions to autocracy, and the very large amount in laissez-faire.

Summarizing, then, we can say that the above diagram and several other types of evidence tend to support the following descriptive generalizations.

1. *Laissez-faire was not the same as democracy:*
   (*a*) There was less work done in it, and poorer work.
   (*b*) It was more characterized by play.
   (*c*) In interviews, the boys expressed preference for their democratic leader.
2. *Democracy can be efficient:*
   (*a*) The quantity of work done in autocracy was somewhat greater.
   (*b*) Work motivation was stronger in democracy as shown, for instance, when the leader left the room.
   (*c*) Originality was greater in democracy.
3. *Autocracy can create much hostility and aggression, including aggression against scapegoats:*
   (*a*) In Experiment I, the autocratic group showed more dominating ascendance; much more hostility (in a ratio of 30 to 1); more demands for attention; more destruction of own property; and more scapegoat behavior.
   (*b*) In Experiment II, one of the four clubs showed a similar reaction.
4. *Autocracy can create discontent that does not appear on the surface:*
   (*a*) Four boys dropped out, and all of them did so during autocratic club periods in which overt rebellion did not occur.
   (*b*) Nineteen out of 20 boys preferred their democratic leader.
   (*c*) There was more discontent expressed in autocracy—even when the general reaction was submissive—than in democracy.
   (*d*) "Release" behavior on the day of transition to a freer atmosphere suggested the presence of previous frustration.
5. *There was more dependence and less individuality in autocracy:*
   (*a*) There was more "submissive" or "dependent" behavior.
   (*b*) Conversation was less varied—more confined to the immediate situation.
   (*c*) In the submissive reaction to autocracy, there was an absolute (though not relative) reduction in statistical measures of individual differences.

(*d*) The observers' impression was that in autocracy there is some loss of individuality.

6. *There was more group-mindedness and more friendliness in democracy:*
   (*a*) In Experiment I, the pronoun "I" was used relatively less frequently in the democratic group.
   (*b*) Spontaneous subgroups were larger.
   (*c*) In Experiment II, group-minded remarks were much more frequent in democracy.
   (*d*) Friendly remarks were slightly more frequent.
   (*e*) In Experiment I, mutual praise was more frequent in the democratic group.
   (*f*) In Experiment II, friendly playfulness was more frequent in democracy.
   (*g*) In Experiment I, the democratic group showed more readiness to share group property.

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29
Leadership Practices in Relation to Productivity and Morale

Robert L. Kahn and Daniel Katz

In applying the principles discovered in laboratory studies to life situations, there is always the problem of the generality and meaningfulness of the findings. Can the more complex social situation be interpreted adequately in terms of the results of laboratory experiments? Will the use of the generalization from the group experiment be effective in the life situation, where the game is being played for higher stakes, and where people are playing for keeps? The direct study of natural groups and organizations may not necessarily challenge the validity of laboratory research, but it can demonstrate its importance or its triviality.

In a program of research on human relations in group organization, the Survey Research Center of the University of Michigan has attempted a direct attack upon the conditions and causes of worker productivity and worker morale through field studies, surveys and field experiments. In this program, the initial research was not planned around tight mathematical models of the hypothetico-deductive variety but was more empirically oriented, seeking to discover and explore those variables which assumed significant proportions in the industrial situations studied. Nevertheless, the contributions of the Lewinian school, the self-realization notions of Dewey and Rogers, and the realistic analyses of institutional structure by Allport and Mayo and Roethlisberger had a good deal to do with the directions of the research.

Field studies of this sort have the great advantage over laboratory situations of dealing directly with social realities and thus meeting the

This chapter was prepared especially for this volume. The findings and many of the interpretations are taken from several of the major studies in the program of human relations research conducted by the Survey Research Center of the University of Michigan. This program is supported by grants from the Office of Naval Research and the Rockefeller Foundation, and by contracts with the organizations in which the studies were conducted. The studies cited were directed by Gerald Gurin, Eugene Jacobson, Robert L. Kahn, Nathan Maccoby, Floyd C. Mann, Nancy C. Morse, and Donald C. Pelz. The results of these studies are presented more fully in the publications listed following this chapter.

problem of applicability and generalization to social phenomena, provided they can deal with variables at some level of generality. They suffer, however, in comparison to laboratory experiments with respect to control in the identification and manipulation of variables. In the Human Relations Program, therefore, methodological emphasis was placed upon checks and controls in the field studies undertaken. Unquantified anthropological observation was replaced by standardized interviews with carefully defined samples of respondents. Impressionistic accounts of attitude and morale, as in the Hawthorne studies, were replaced with measures of workers' psychological responses. Effects of supervisory practices were not judged on the basis of what management assumed the results to be. Independently derived measures were employed in testing relationships between factors. For example, supervisory behavior was measured independently of its effects upon productivity and morale of workers. Interestingly enough, this is the first time such measurements have ever been taken in an effort to get at the functional relationships in an ongoing organization. Moreover, where productivity was taken as the dependent variable, supervisory practice as the independent variable, and morale as the intervening variable, the groups which were compared were equated on all the technological factors which could affect productivity.

Studies in this program of research have now been conducted in a variety of industrial situations, and in civilian and military agencies. These include the home office of an insurance company, maintenance-of-way section gangs on a railroad, an electric utility, an automotive manufacturer, a tractor company, an appliance manufacturer, and two agencies of the federal government. Some of the major research findings emerging from these projects are summarized in the following pages.

Differentiation of Supervisory Role

The supervisor with the better productive record plays a more differentiated role than the supervisor with the poor productive record; that is, he does not perform the same functions as the rank and file worker, but assumes more of the functions traditionally associated with leadership. Foremen of railroad section gangs, for example, were found to differ with respect to the amount of time they spent in planning the work and performing special skilled tasks (Table 41.1). In general, the foremen with the better production records devoted more time to these aspects of their work, according to their own report. They were also perceived by their men as possessing superior planning ability (Table 41.2). Similarly, in a company manufacturing heavy agricultural and road-building equipment, both the foremen and the men of high producing sections evaluated the quality of planning as superior to that of most other groups.

TABLE 41.1

RELATION OF WHAT FOREMAN REPORTS DOING ON THE JOB TO SECTION PRODUCTIVITY
(Section Gangs on a Railroad)

	Supervisory Duties		Non-Supervisory Duties			
	Planning; Skilled Tasks	Providing Materials to Men; Watching Men	Same Things Men Do	Keeping up Track	Number of Duties Mentioned *	N
Foremen of high-producing sections	42	41	8	7	98	36
	83		15			
Foremen of low-producing sections	25	42	15	14	96	36
	67		29			

* The responses total more than 72 because many foremen gave more than one answer.

TABLE 41.2

RELATION OF MEN'S PERCEPTION OF FOREMAN'S PLANNING ABILITY TO SECTION PRODUCTIVITY
(Section Gangs on a Railroad)

Question: "How good is the foreman at figuring work out ahead of time?"

	Very Good	Pretty Good	So-so and Not Very Good	Not Ascertained	Total	N
Men in high-producing sections	38%	48%	2%	12%	100%	156
Men in low-producing sections	27%	54%	10%	9%	100%	142

Another indication of the ability of the high-producing supervisor to differentiate his own function from that of the men is the amount of time which he gives to the work of actual supervision, as contrasted to the time allocated to activities which are not uniquely those of the supervisor. In the studies of clerical workers, railroad workers, and workers in heavy industry, the supervisors with the better production records gave a larger proportion of their time to supervisory functions, especially to the interpersonal aspects of their job. The supervisors of the lower-producing sections were more likely to spend their time in tasks which the men

themselves were performing, or in the paper-work aspects of their jobs (Table 41.3).

TABLE 41.3

RELATION OF TIME SPENT IN SUPERVISION TO SECTION PRODUCTIVITY
(Sections in an insurance company; section gangs on a railroad; work groups in a tractor factory)

Questions:
Insurance company—"What proportion of your time is given to supervisory matters? What proportion to other duties?"
Railroad—"How much of your time do you usually spend in supervising, and how much in straight production work?"
Tractor factory—"How much of your time do you usually spend in supervising the men, and how much in other things like planning the work, making out reports, and dealing with people outside your section?"

Section Productivity	50% or More of Time Spent in Supervising	Less than 50% of Time Spent in Supervising	Not Ascertained, or Can't Separate Functions	Total	N
Insurance company					
High	75%	17%	8%	100%	12
Low	33	59	8	100	12
Railroad					
High	55	31	14	100	36
Low	25	61	14	100	36
Tractor factory					
97–101%	69	31	0	100	52
91–96%	59	41	0	100	71
86–90%	48	52	0	100	89
80–85%	41	59	0	100	69
50–79%	54	46	0	100	35

The reverse side of this picture was also revealed in the railroad study, in which statements made by the section hands in low-producing sections indicated a tendency for an informal leader to arise in these sections. For example, in the low sections there was more frequently some one member of the group who "spoke up for the men when they wanted something." Apparently the informal organization in the low groups compensated in some respects for the abdication or misdirected leadership of the foremen, but not without some losses in total effectiveness (Table 41.4).

The recognition by the supervisor of the importance of giving more time to his leadership role was also reflected in the morale findings. In the tractor company, for example, the men supervised by foremen who reported spending more than half their time in actual supervision not only had higher production records, but were more satisfied with the

company than the men whose supervisors gave their time primarily to other aspects of the job.

TABLE 41.4

RELATION OF MEN'S PERCEPTION OF A GROUP SPOKESMAN TO SECTION PRODUCTIVITY
(Section Gangs on a Railroad)

Question: "Is there some one man in the section who speaks up for the men when they want something?"

	Yes	No	Not Ascertained *	Total	N
Men in high-producing sections	9%	47%	44%	100%	156
Men in low-producing sections	17%	37%	46%	100%	142

* Consists primarily of employees of whom this question was not asked.

Moreover, in the same company the men with the highest morale as measured in terms of satisfaction with job, supervisor, and company were those who perceived their supervisors as performing a number of broad, supportive functions. Almost all employees, of high or low morale, reported that their supervisors enforced the rules and kept production up, but the high morale employees also reported that their supervisors performed such other functions as on-the-job training, recommending people for promotion and transfer, and communicating relevant information about the work and the company.

The differentiated role of the supervisor apparently affects the productivity of the group in two ways. The attention given to planning has a direct effect upon output in the coordination and organization of the tasks of the group. This is a type of skill of an engineering or institutional sort, in that the technical know-how of the supervisor is brought to bear upon the ordering of the work of the group on a long range basis. The second way in which the supervisor affects productivity is more indirect. He can increase or decrease the motivation of his employees to produce. These two abilities are not necessarily correlated in the same supervisors. But our evidence indicates that either the engineering skill or the human relations skill can increase the performance of the group. The relative importance of these two factors is determined in good part by the degree of freedom in the situation for the given skill to be effectively manifested. If the company is so tightly organized and so centrally controlled that the tasks of even the smallest work groups are prescribed, then the first-level supervisor with extremely high planning ability will not affect the productive process.

Closeness of Supervision

A second major dimension which appears to discriminate between high- and low-producing supervisors is the closeness with which they supervise, or the degree to which they delegate authority. Although the high supervisors spend more time performing the supervisory functions, they do not supervise as closely as their low-producing colleagues. This general characteristic is reflected in a number of specific research findings. In the insurance study, low-producing supervisors were found to check up on their employees more frequently, to give them more detailed and more frequent work instructions, and in general to limit their freedom to do the work in their own way (Table 41.5). In the company manufacturing earth-moving equipment, the high-producing workers reported more often that they set their own pace on the job (Table 41.6).

TABLE 41.5

RELATION OF CLOSENESS OF SUPERVISION OF EMPLOYEES TO SECTION PRODUCTIVITY
(Sections in an Insurance Company)

	Close Supervision	General Supervision	Not Ascertained	*N*
Heads of high-producing sections	6	5	1	12
Heads of low-producing sections	11	1	0	12

NOTE.—The findings are based upon an over-all code which defines closeness of supervision as the degree to which the supervisor checks up on his employees frequently, gives them detailed and frequent instructions and, in general, limits the employees' freedom to do the work in their own way. This over-all code is derived from the supervisors' discussions of their jobs.

Closeness of supervision is an interesting example of the necessity for distinguishing between the engineering (or institutional) skill of the

TABLE 41.6

RELATION OF MEN'S PERCEPTIONS OF PACE-SETTING FACTORS TO INDIVIDUAL PRODUCTIVITY
(Employees in an Insurance Company)

Question: "What is the most important in setting the pace for your work?"

Employees With Productivity of:	Set Own Pace	Speed of Line Sets Pace	Speed of Machines, Condition of Tools, Set My Pace	Pressure for Production Sets Pace	Other, Unspecified and Not Ascertained	T	*N*
100–119%	46%	14%	17%	9%	14%	100%	327
90–99%	38	12	27	12	11	100	762
80–89%	39	11	27	10	13	100	452
70–79%	38	11	27	9	15	100	269
40–69%	37	5	31	7	20	100	275

supervisor and his human relations skill in motivating people. Close supervision often is employed as an institutional device for insuring that workers follow their job assignments correctly and assiduously. But this very practice also has negative morale and motivation implications, and some supervisors may give more freedom to their employees as a way of increasing their motivation. The greater freedom may produce positive results through the satisfaction that the individual has in participation and in self-determination. There is considerable evidence to support this interpretation in the research findings. In the tractor company studied, workers who perceived their foremen as supervising them less closely were better satisfied with their jobs and with the company.

In the same study, each worker was asked how much he had to say about the way his own job was done, and whether he would like to have more or less to say on this subject. Workers who reported having a lot to say about their own work wanted no less, and were relatively high on the three dimensions of morale—satisfaction with job, supervisor, and company. Workers who reported having little say about how their jobs should be done wanted more autonomy in this area, and were relatively dissatisfied with their jobs, their supervisors, and the company. Apparently, close supervision can interfere with the gratification of some strongly felt needs.

There is a great deal of evidence that this factor of closeness of supervision, which is very important, is by no means determined at the first level of supervision. Rather, the first-level supervisor tends to offer to his men the style of supervision which he experiences with his own supervisor. Or to put it another way, the style of supervision which is characteristic of first-level supervisors reflects in considerable degree the organizational climate which exists at higher levels in the management hierarchy. Among the many findings which bear out this interpretation are the following: In the insurance study the low-producing supervisors reported that they were under closer supervision from above than did the high-producing supervisors (Table 41.7). In the agricultural equipment factory, foremen of high-producing sections indicated relatively more freedom or scope of authority. They stated that they were able to plan their own work as much and as far ahead as they wanted to (Table 41.8). In the railroad study there was a tendency for the foremen of high-producing gangs to report relatively less pressure from above and to be more satisfied with the amount of authority which they had on their job, although these findings were not statistically significant.

There is an additional analysis which bears on the notion that supervisory behavior at the first level is conditioned in great degree by practices of higher management. The general hypothesis was that the relationships between the behavior of first-level supervisors and the attitudes of their

TABLE 41.7

RELATION OF CLOSENESS OF SUPERVISION OF SECTION HEAD BY HIS SUPERIOR TO SECTION PRODUCTIVITY
(Section Heads in an Insurance Company)

	Close or Fairly Close Supervision	Fairly General or Quite General Supervision	Not Ascertained	*N*
On high section heads	2	9	1	12
On low section heads	8	4	0	12

NOTE.—Closeness of supervision is based on an over-all code, and was defined for coding purposes as the degree to which the section head was given freedom to handle his own problems by his superiors, as compared with the degree to which the superior was directly involved in running the section.

employees are importantly conditioned by the organizational milieu in which the first-level supervisors are functioning, and particularly by the amount of their power or influence in the department—"their potential degree of control over the social environment in which their employees are functioning " In other words, the foreman who is given so little freedom or authority by his supervisors that he is unable to exert a meaningful influence on the environment in which he and his employees function will be ineffective in dealing with employees, regardless of his human relations skills. His intended supportive actions may even have a negative effect on employee attitudes, insofar as they encourage expectations which cannot be met by him. The data from this analysis of supervisors in a public utility in general support the hypothesis. Under high-influence supervisors, 19 of 28 correlations between supervisory practices and

TABLE 41.8

RELATION OF FOREMEN'S PERCEPTION OF OPPORTUNITY FOR PLANNING TO SECTION PRODUCTIVITY
(Foremen in a Tractor Factory)

Foreman Question: "Are you able to plan your work ahead as much as you would like?"

Foremen of Sections With Productivity of:	Can Plan Ahead as Much as Needed	Sometimes Have Trouble Planning Far Enough Ahead	Usually Can't or Hardly Ever Can Plan Ahead	Total	*N*
97–101%	37%	42%	21%	100%	52
91–96%	51	32	17	100	71
86–90%	29	41	30	100	89
80–85%	29	46	25	100	69
50–79%	14	40	46	100	35

employee attitudes are positive, though small. Under low-influence supervisors, 20 out of 28 are zero or negative.

Employee-Orientation

A third dimension of supervision which has been demonstrated to be consistently related to productivity is a syndrome of characteristics which can be called "employee-orientation." The employee-oriented supervisor, in contrast to the production-oriented or institution-oriented supervisor, gives major attention to creating employee motivation. The specific ways in which he does this may vary from situation to situation, but they contribute to a supportive personal relationship between himself and his work group members. Thus in the railroad study, the workers in high-producing groups more frequently characterized their foremen as taking a personal interest in them and their off-the-job problems. This finding was repeated in a study in heavy industry, in which the high-producing employees reported that their foremen took a personal interest in them. High-producing foremen also were more likely to say that the men wanted them to take a personal interest in them, whereas the low-producing foremen were more likely to have the perception that the men resented such a demonstration of interest. It is quite possible that this difference in perception is in part cause and in part effect. The low-producing foreman has a less satisfactory relationship with his employees and he may well be right in thinking that they want no more of the kind of relationship which he offers. At the same time, his conviction that they wish to minimize the relationship undoubtedly contributes to the psychological distance between him and the work group.

Even more consistent relationships were found in those behavior areas which not only reflect smooth interpersonal dealings, but also offer tangible evidence of the supportive intentions of the supervisor. Thus, in the railroad study the high-producing foremen were said by their men to be more understanding and less punitive when mistakes were made (Table 41.9). They were also more likely to groom employees for promotion by teaching them new things (Table 41.10).

In the insurance study, the high-producing supervisors were more employee-oriented and less production-oriented than their low-producing colleagues. The low supervisors emphasized production and technical aspects of the job, and tended to think of their employees as "people to get the work done," in contrast to emphasizing training people, taking an interest in employees, and considering them primarily as individual human beings. In the same study, the supervisors were asked the question, "Some people feel the job of supervisor is tough because they stand between the workers and management. Do you feel that this is a problem?"

TABLE 41.9

RELATION OF MEN'S PERCEPTION OF FOREMAN'S REACTION TO BAD JOBS TO SECTION PRODUCTIVITY
(Section Gangs on a Railroad)

Question: "What does the foreman do when you do a bad job?"

	Foreman Punitive	Foreman Nonpunitive	Not Ascertained	Total	N
Men in high-producing sections	35%	54%	11%	100%	156
Men in low-producing sections	50%	36%	14%	100%	142

The high-producing supervisors were predominantly employee-identified, according to their own report. The low-producing supervisors were, for the most part, management-identified. This general statement was borne out by the supervisors' reactions to two aspects of company policy which at the time of the study constituted problems in morale or employee motivation. In both of these areas, the placement policy and the dining

TABLE 41.10

RELATION OF WAYS FOREMAN TRAINS MEN FOR BETTER JOBS TO SECTION PRODUCTIVITY
(Section Gangs on a Railroad)

Question: "In what way [does the foreman train men for better jobs]?"

	Teaches Men New Techniques and Duties	Teaches Men Better or Easier Ways of Doing Usual Jobs	Doesn't Train Men	Not Ascertained	Total	N
Men in high-producing sections	29%	21%	33%	17%	100%	156
Men in low-producing sections	17%	24%	44%	15%	100%	142

room setup, the high-producing supervisors were more critical and more aware of the situations as sources of employee disaffection than were the low-producing supervisors.

In the study of industrial workers, there was a whole cluster of findings which seems to fit this framework. The employees with highest production records were more likely to report a good over-all relationship with their foreman, in terms of the quality of his supervision, the way they got along with him, and the interest he took in them. In addition, they reported good communications with him; they said that the foreman let

them know how they were doing, that he was easy to talk to, that it usually helped to talk over a problem with him, and that he took care of things right away (Table 41.11). This indicates both a supportive relationship and an effective role in the larger structure. It is perhaps a reflection of the importance of the supervisor's ability to understand and identify himself with the employees that, in this study, the foremen who had previously belonged to a labor organization had better production records than those who had not.

In this study, also, the employee-identification of the higher-producing supervisors was associated with a greater criticism of certain company policies, although at the same time high-producing supervisors were better satisfied with many aspects of their own jobs, and felt that their own superiors were well pleased with their work. But it was the high-producing foremen who in greater numbers felt that their own supervisors were doing less than a very good job, and were no more than fairly good at handling people.

A number of the supervisory characteristics which we have included in the concept of employee-orientation have important effects upon employee satisfaction as well as productivity. This is particularly true for the foreman's giving reasons for forthcoming changes on the job, demonstrating to employees that he holds other aspects of the work situation to be as important as high productivity, and that his concept of reasonable performance is not excessive. In the tractor company, these characteristics were related to job satisfaction, satisfaction with supervision, and satisfaction with the company as a whole.

A related finding appeared when each employee was asked who in the work situation took the greatest interest in him. The workers who felt that the foreman took the greatest interest in them also were getting the greatest psychological return from their employment in terms of satisfaction with job, supervisor, and company.

There is evidence that the quality of employee-orientation, like closeness of supervision, is in part determined by organizational characteristics and is not merely the reflection of personality traits.[1] For example, the tractor foremen who were reported by their men to make a practice of explaining in advance any changes in the job situation said that they were similarly treated by their own supervisors. The replication of supervisory behavior at successive echelons of large organizations is a phenomenon which deserves further study, particularly to reveal the motivational basis for such behavior and the environmental cues on which it depends.

[1] Research findings in this area are reported by Ralph M. Stogdill in "Studies in Naval Leadership, Part II," in Guetzkow, H. (Ed.), *Groups, leadership, and men*. Pittsburgh: Carnegie Press, 1951.

TABLE 41.11

RELATION OF EMPLOYEE PERCEPTIONS OF SUPERVISORY BEHAVIOR TO PRODUCTIVITY
(Workers in a Tractor Factory)

	EMPLOYEES WITH PRODUCTIVITY OF				
	100–119%	90–99%	80–89%	70–79%	40–69%
Over-all relationship with foreman *					
Better than most	24%	21%	17%	16%	14%
About the same as most	71	73	77	76	78
Not as good as most	4	5	5	7	7
Not ascertained	1	1	1	1	1
Total	100%	100%	100%	100%	100%
Foreman interest in employee †					
Great deal or quite a lot	47%	45%	46%	40%	38%
Little or none	50	54	52	59	61
Not ascertained	3	1	2	1	1
Total	100%	100%	100%	100%	100%
Foreman communication to employee ‡					
Always or usually know	59%	60%	54%	49%	55%
A lot of times I don't know or hardly ever know	39	39	45	50	45
Not ascertained	2	1	1	1	0
Total	100%	100%	100%	100%	100%
Foreman accessibility for discussion §					
Easy to talk to about most things	78%	76%	78%	67%	70%
Hard to talk to about many things	22	22	22	33	29
Not ascertained	0	2	0	0	1
Total	100%	100%	100%	100%	100%
Foreman action following discussion ‖					
Usually or always does some good	54%	47%	47%	38%	44%
Sometimes does some good	30	34	35	40	33
Usually does no good or hardly ever does any good	16	18	16	22	22
Not ascertained	0	1	2	0	1
Total	100%	100%	100%	100%	100%
Foreman promptness in taking action ¶					
Takes care of things right away	55%	52%	51%	43%	52%
Sometimes takes care of things right away, sometimes doesn't	28	30	28	32	27
Lets things go	16	17	20	25	20
Not ascertained	1	1	1	0	1
Total	100%	100%	100%	100%	100%
Number	327	762	452	269	275

* "On the whole, how would you say you get along with your foreman?"
† "How much interest does your foreman take in you on the job?" (Significant between .05 and .10 level.)
‡ "Does your foreman let you know how you're doing? Do you know where you stand with him?"
§ "If you have a problem you would like to talk over with your foreman how easy is it to talk to him?"
‖ "If you talk over a problem with your foreman, does it do any good?"
¶ "If there is something that needs to be taken care of, will your foreman do it right away or will he let it go?" (Significant between .05 and .10 level.)

Group Relationships

The fourth factor which seems to be emerging as a major determinant of productivity in industrial situations involves relationships in the work group. Such a variable was tentatively identified in the insurance study. Employees in the higher-producing groups tended to express a more favorable evaluation of their section (work group) and of their division. This was based on over-all coded ratings of the interview content, and also on specific responses to the question, "How do you think your section compares with other sections in the company in getting a job done?" Several interpretations of this finding are possible. On the one hand it is conceivable that the employees in high-producing groups were simply reporting what they knew to be the objective fact—that their groups had superior work records. However, it is also possible that high involvement in the work group was the cause, and high productivity the effect. Finally, and perhaps most probably, there is the possibility that pride or involvement in the work group and productivity are interacting variables, and that an increase in either one tends to bring about an increase in the other (Table 41.12).

In the railroad study, both the men and the foremen in high-producing groups evaluated their group performances as better than most, even though they had no formal channels of communication through which to learn of the productivity of other groups.

TABLE 41.12

RELATION OF EMPLOYEE EVALUATION OF WORK GROUP TO SECTION PRODUCTIVITY
(Employees in an Insurance Company)

	High Pride	Medium Pride	Low Pride	Total	N *
Employees in high-producing sections	33%	37%	30%	100%	143
Employees in low-producing sections	10%	41%	49%	100%	142

NOTE.—Evaluation of work group is an index score obtained by summing coders' ratings of responses to the following items:
1. "How well do you think your section compares with other sections in the company in getting a job done?"
2. "How well do you think your division compares with other divisions in the company in getting a job done?"
3. An over-all coder rating of the respondent's degree of identification with his section; and
4. An over-all coder rating of the respondent's degree of identification with his division.
* There were 66 employees in high sections and 68 in low sections who could not be coded on one or more items of this index.

In the factory manufacturing earth-moving equipment, this area was further explored. It was found that high-producing employees more often said that their groups were better than most others at putting out work.

They also reported that they felt they were "really a part of their group," in contrast to the lower producers who were more likely to say that they were "included in some ways but not in others," or that they did not really feel that they were members of the group. Moreover, foremen of the higher-producing groups cited their sections as better than most in the way in which their men helped one another out on the job. Foremen of low-producing groups said their sections were not as good as most in this respect. Nor were these responses merely reflecting some general effect for the group (Table 41.13). There was no difference between high and low

TABLE 41.13

RELATION OF EMPLOYEE EVALUATION OF WORK GROUP TO PRODUCTIVITY
(Workers in a Tractor Factory)

Employee question: "When it comes to putting out work, how does your work group compare to others?"

Employees with Productivity of:	Better Than Most	The Same as Most	Not as Good as Most	Not Ascertained	Total	*N*
100–119%	33%	63%	2%	2%	100%	327
90–99%	32	65	2	1	100	762
80–89%	28	67	3	2	100	452
70–79%	26	67	7	0	100	269
40–69%	21	67	11	1	100	275

producers in the characteristics they ascribed to their groups in the areas of skill, know-how, education, and the like. All this tends to support the notion of team spirit or cohesiveness in the work group as a factor in productivity.

The relationships in the primary group are also important among the determinants of morale, especially satisfaction with the job and with the larger organization. Workers in the tractor company who reported that they really felt a part of their work group, and that they would prefer their present jobs to identical jobs in other groups, tended to be high in satisfaction with job and company (Table 41.14).

Thus in the area of group relationships, as in others, we find that the twin criteria of productivity and morale have many determinants in common. This suggests again that the effect of supervisory behavior on motivation may be basic to understanding productivity differences. Yet the coexistence of high morale and low productivity, or more frequently, low morale and high productivity, is sufficiently common so that no consistent relationship between productivity and morale has appeared in any of these research studies. One explanation of this discrepancy has already been suggested, namely, that the supervisor can increase productivity in

two fairly independent ways: either through his engineering skill or through his ability to motivate his men. Another major explanation is that productivity can be increased in some instances by company practices involving negative sanctions which affect morale adversely.

TABLE 41.14

RELATION OF GROUP BELONGINGNESS TO PRODUCTIVITY
(Workers in a Tractor Factory)

Employee question: "Do you feel you are really a part of your work group?" (Significant between .05 and .10 level.)

Employees with Productivity of:	Really a Part	Included in Most Ways	Included in Some Ways	Not Ascertained	Total	N
100–119%	58%	24%	10%	8%	100%	327
90–99%	56	29	10	5	100	762
80–89%	51	31	13	5	100	452
70–79%	52	28	10	10	100	269
40–69%	46	31	15	8	100	275

It is possible also that the lack of a consistently high correlation between morale and productivity in these studies reflects the fact that we are dealing with only one measure of the over-all costs of production, namely, the amount at one point in time. If we were to include the costs of turnover, absence, and scrap loss, the correlation with morale might be higher. For example, in the case of a company with high production at a given point in time because of negative sanctions, the impression of over-all efficiency might change if we also had measures of turnover and quality of product.

Conclusion

We have considered some research findings which suggest four classes of variables to be consistently related to the productivity of an organizational group and to the psychological returns which the group offers its members. These classes of variables—the supervisor's ability to play a differentiated role, the degree of delegation of authority or closeness of supervision, the quality of supportiveness or employee-orientation, and the amount of group cohesiveness—have been developed from a program of studies conducted in complex, ongoing organizations, the majority of them in business or industry.

In reviewing these research findings, one finds confirmation for much of the recent product of small group experimentation by Lewinian psychologists and others. Lewin's work on the decision-making process, the

research of Lippitt and White on leadership climate and style, Bavelas' experiments with on-the-job autonomy in pace-setting, the Harwood project of Coch and French, the communications studies of Festinger and his colleagues—all offer results which are in substantial agreement with the findings reported here. Such agreement is especially significant in the light of the differences between most of the small group studies and the work of the Human Relations Program, in method, theory, and research site.

There is much in the experience of the program, however, which reinforces the ideas with which this chapter was begun—that it is necessary to study complex social situations and organizations directly, as well as to attempt laboratory abstractions of their most significant problems and characteristics. This is true not only because such studies facilitate generalization of research results (if they are not phenotypical relationships), but also because a direct grappling with the live organization tends to orient the researcher toward the most real and significant dimensions of organizational structure and function. The study of living organizations, particularly under conditions of change, suggests serious limitations in attempting to understand organizational change in terms of the primary group alone, and even more drastic difficulties in attempting to induce change by dealing only with the primary group. This wholistic emphasis upon the interrelationships in the total structure is of course consistent with the Lewinian point of view.

Primary work groups exist only in a larger organizational context, and many an unsuccessful industrial training program testifies to the almost insurmountable difficulties of producing change by means which fail to take adequate account of that context. To put it another way, the psychological field is an intervening construct and as such is not directly susceptible to manipulation; the field changes when the social psychological environment changes, and such alterations usually involve broad segments of the organization in addition to the group in which change is proposed. The awareness of industrial employees of these organizational characteristics is great. These results suggest that the full motivation of workers in a complex organizational system can be tapped only when some system of functional representation assures them of an element of control in the larger organization as well as the primary group.

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30
Leadership and Crises

Robert L. Hamblin

The purpose of this paper is to report a laboratory investigation of two hypotheses about leadership during crises, namely: leaders have more influence during periods of crisis than during noncrisis periods, and groups tend to replace their old leader with a new leader if the old leader does not have a solution to a crisis problem.

Theory

Crises

All groups, whether they are large or small, powerful or weak, have the possibility of experiencing a crisis, *an urgent situation in which all group members face a common threat.* A common crisis experienced by family groups is the reduction or loss of income through unemployment, sickness, or death. Religious groups may face crises of persecution. Political parties usually experience a crisis in every election or, if there is lack of electoral machinery, in every revolution. Nations face a crisis in every sudden economic depression or inflation and in every attack by another nation. A crisis is a generic social experience.

There have been a number of field and laboratory studies of group behavior during crises. Stouffer, *et al.*, have studied the reaction of troops to the crisis of battle (20). Durkheim has studied the influence of religious, economic, and political crises on suicide rates and social integration (5). Hovland and Sears (12), Marshall (13), and Moore (15) have studied some social effects of economic crises at the societal level. However, only in Marshall's study is there an investigation of the effects of crises on leadership.

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Leadership

When most people think of leadership or leaders they think of traits. This may be because of a psychological bias in our culture where aspiring Ben Franklins attempt to develop the traits of a leader as a means of ascending the ladder of success. Consistent with this bias, social scientists have conducted a number of studies in an attempt to isolate the crucial traits of leaders. These attempts have been abortive, not in the sense that each investigator was unable to isolate crucial traits that separated the leaders from the nonleaders, but rather that few commonalities appeared among the crucial traits isolated in the different studies. The brave souls (2, 19) who have tried to synthesize the results of these studies have become discouraged with the trait approach to the study of leadership and have evidently communicated this discouragement quite effectively as most psychologists seem to be abandoning it (4, 535–550; 7; 16, 328–340).

Modern Machiavellis have followed an alternative approach which has been more fruitful. An interest not in what leaders *are* (traits) but in what *successful* leaders *do* has led them to study in experimental situations the effects of a number of different leadership procedures. (The Lewin-Lippitt-White Autocracy Democracy experiment is, perhaps, the best known of these studies.) Although their substantive findings are important, a significant scientific "breakthrough" was achieved by this group in their development of reliable observational techniques for measuring interaction variables including leadership or influence.

These observational techniques led to the discovery that the leader-follower dichotomy is quite misleading in that influence is almost always distributed, sometimes quite evenly, among group members. That is, the activities of the leader, the high influencer, differ only in degree from the activities of the nonleaders.

This discovery that influence is widely distributed has led in turn to an interest in situational variables which affect the distribution of influence. In particular, the effect of size on the distribution of influence has been investigated several times (1, 9, 11, 14). The present study represents a continuation of this interest in situational variables which affect the distribution of influence. The situational variable here is the "crisis" versus the "noncrisis" situation.

However, there is another important finding from these observational studies which is important in understanding this experiment. After isolating a number of leadership functions, investigators have discovered that a group may have more than one leader at a time. Different members may take the lead in fulfilling different group functions. One member may have the most substantive influence, that is, the most ideas adopted

as to how to solve the group's environmental problems. He is called the substantive or task leader. Another member may influence the group the most in coordinating the activities of the various members into a cooperating whole. He is called a procedural leader. Another group member may have the most influence in helping group members handle their emotions and thus in maintaining group cohesion. He is called the socioemotional leader. (Of course, a single individual may at the same time be the task, procedural, and socioemotional leader.[1]) In this experiment we are concentrating on the investigation of substantive leadership since the crisis problem is an environmental problem.

The Hypotheses

The first hypothesis (the centralization hypothesis) came from Weber's writings on bureaucracy. Bureaucracies are intricate mechanisms developed to foster the complete centralization of substantive influence in the hands of one man, the director of the bureau. The hundreds and sometimes thousands at the lower levels are supposed to follow the orders of the director in solving the bureau's environmental problems.

Weber assumes that bureaucracies develop when complex problems requiring the coordinated efforts of a vast number of people have to be solved in a very limited time, such as when an army is in battle. Of course, complex problems, coordinating the efforts of vast numbers, and limited time add up to urgency or time pressure. Bureaucracy (and, perhaps, more generally, centralization of influence) occurs because, as Weber points out, "Precision, speed, unambiguity . . . reduction of friction . . . are raised to an optimum point . . ." (6).

As noted above, an essential characteristic of all crises is urgency or time pressure. Hence, from Weber's writings we are led to expect that influence may be more centralized (that the high influencer would have relatively more influence) in crisis than in noncrisis periods.

The second hypothesis (the replacement hypothesis) comes from a working assumption of almost every student of modern politics that a leader (or party) will be voted out of power if he (or it) fails to cope successfully with any serious domestic or international crisis.

Of course, there are some crisis problems for which humans have no known solution. But even in these crises the leader is expected to be re-

[1] Using data from his interaction categories, together with data from a postexperiment questionnaire, Bales discovered a tendency for one member to become what he called the task leader and another member to become the socioemotional leader. His data indicate that the task leaders were high both on substantive and procedural influence. However, using a set of influence categories which may be more sensitive, we found an increasing tendency for one member to become the substantive leader and another to become the procedural leader as group size increases (9).

placed. In a study of national politics from 1824 to 1924, Marshall (13) presents rather striking data which support this assumption. From 1824 to 1924 the economy of the United States was predominantly agricultural and agricultural economies usually suffer an economic crisis during periods of drought. Marshall's data show that in 11 out of 13 elections where rainfall was below average during the four years prior to election, the party in power was voted out of office. His data also show that in 11 out of 12 elections where rainfall was above average during the four years prior to elections, the political party in power remained in office.

It is a long way from national political parties to the high influencer in a laboratory group, and it is a long way from economic crises experienced by nations to an experimentally produced crisis experienced by *ad hoc* groups of three in a laboratory. But if the assumption or principle is general it should apply. Hence, the hypothesis that groups tend to replace their old leader with a new leader if the old leader does not have a solution to the crisis problem.

Method

The Experimental Groups

The experiment reported herein involves the before-after observations of twelve three-person groups in a crisis situation and twelve more three-person groups in a control situation. However, this experiment was preceded by two rather elaborate pretests which together involved the observation of an additional 60 groups. It took us this long to work out the measurement problems encountered as well as to acquire the courage to produce a crisis that was severe enough to be valid or, for that matter, interesting.

The participants were either personal acquaintances of the experimental staff or residents of a housing development for married students. Ages ranged between twenty-five and thirty years. Half of the participants were men; the other half women. To reduce barriers to cooperation, participants composing any given experimental group were of the same sex and of approximately the same age.

The Experimental Situation

The experimental task involved a modified shuffleboard game which lasted about 30 minutes.[2] Each group of participants was ushered into the experimental room, shown the experimental equipment, and given a general but very incomplete idea about the nature and rules of the game.

[2] For a rather complete set of the instructions used in this experiment, see (10).

They were told that they were to discover the rules themselves by trying different things and by watching a light board. A red light would flash every time a rule was violated and a green light would flash every time a score was made.

The participants were told that they would be competing with high-school students who had previously participated in a similar experiment; that their cumulative scores and the average cumulative scores of the high-school students would be posted for each of six, 5-minute playing or task periods into which the game was divided. To ensure their ego involvement the experimenter said:

> . . . the ability to analyze a rather complex situation is the important skill in this game. I have seen many groups work very hard to make many successful shots only to lose most of the points gained through penalties because they failed to learn the . . . rules. For this reason we expect mature college graduates to do better than high-school students. If you do get more points, however, you will have to work hard; these high-school students did.

These instructions were evidently successful for the average group behaved as though they were in a tournament. They rushed, ran, and not infrequently shouted. Most groups were visibly satisfied as they mastered the rules and as their scores began to exceed those of the high-school students. The groups were not given the scores they actually earned, however. The threat that would have been experienced by some of the groups who did not do so well as the high-school students had to be avoided. Hence, standard scores were given. These standard scores exceeded the high-school scores by a small but comfortable margin at the end of the first half, or experimental Period I.

By the end of Period I the average group had learned most of the rules and, hence, was making numerous successful shots as indicated by the frequent flashing of the green lights and the before-mentioned lead over the high-school scores. The participants presented a picture of self-satisfaction and confidence. The situation during the last half, or experimental Period II, remained about the same for the control groups. They usually worked hard consolidating their lead over the high-school students and their scores continued to exceed the scores of the high-school students by an ever-widening margin. But the situation changed markedly for the crisis groups. The self-satisfaction and confidence they exhibited at the end of Period I was that "which goeth before a fall."

The Crisis

The crisis was produced by changing the rules of the game. Procedures that were permissible before the change were now against the rules; pro-

cedures that were against the rules now became permissible. Lights had been used in teaching the participants the original rules and they could be used in indicating the changes. As the participants saw it, they were receiving red lights for doing the very things for which they had been receiving green lights. But this was not all. As soon as the participants learned a new rule and received a green light, the rule was changed again. The new effect was that the participants were unable to earn a single score during the last three periods. Since high-school groups were control groups, their scores continued to increase during the last half. Of course, the members of the crisis groups did not know this. As they saw it, their leads vanished, and then their scores fell farther and farther behind those of their rivals.

In the context of the self-satisfaction and confidence at the end of Period I, the switch in Period II to failure of previously successful procedures, the inability to find new procedures that were permanently successful, and the ever-increasing margin of failure in the scores during Period II proved quite effective in producing threat or frustration. The crisis groups looked more frustrated and they engaged in much more aggression than did the control groups during the last half. (The difference in the frequency of observed aggression was significant beyond the .05 level.[8]) Also after the experimental session was over, the crisis groups were very hostile. It took a long, permissive discussion and all the skill the experimenters had to reduce this hostility. However, after discussing the experimental procedures, purpose, and results, most of the participants in the crisis groups acted happy and proud that they had received the "full treatment." Even so, there were some who went away wearing hostile expressions.

But our real fear in this final experiment was not that the threat might not be severe enough, but that it would be so severe that the situation would seem hopeless rather than urgent, that the crisis groups would simply withdraw. Not one group gave up, however. Until the end the members of all crisis groups continued to search for, find, and test new procedures. Hence, the situation was evidently both threatening and urgent.

Measurement

As mentioned above, the leadership variable used in this study involves substantive influence or ideas for solving the environmental problems which are adopted by the group.

[8] For the details of this finding, see (10).

The environmental problem directly involved in the crisis was to determine the rules by trying different procedures for playing the game and by watching the flashing lights. In attempting to solve this problem, the participants would usually suggest different procedures to be tested. In addition, as the different procedures were tested, the participants would suggest that certain rules were in effect. Not all these suggestions or ideas for solving the environmental problem were adopted by the group. If either or both of the other participants did cooperate in the test of a suggested procedure, a unit of influence was scored. (Most of the suggested procedures were tried and tested by all participants, as the flashing lights were ambiguous enough to make a multiple test desirable.) Also, a unit of influence was scored when a rule was suggested, but not immediately tested if there were some agreement, an absence of disagreement, and subsequent conformity to the rule.

An observation form was developed with a column for each participant and a column for "comments." Each time a participant suggested a procedure to the group for testing, or suggested a rule, a "/" was placed in his column in a new row, and a word or two was placed in the same row in the "comments" column to help the observer recall the suggestion if its adoption was delayed. If a suggestion was actually adopted (as indicated above) the "/" was changed to an "X" and was counted as a unit of substantive influence. Scripts were used in training the observers and it was possible to reduce the reliability error to less than 10 per cent.

The basic data were used to calculate two standard measures—influence ratios and acceptance rates.

A given member's influence ratio for a given period represents his raw influence score (the number of accepted substantive suggestions) divided by the average of the raw influence scores of the other group members. For example, if during Period I the high influencer has a raw influence score of 10 adopted suggestions and the other members have scores of 3 and 2 accepted suggestions, then the influence ratio for the high influencer would be 4. He would have four times more influence than the average of the other group members.

A given member's acceptance rate for a given period is simply the proportion of his suggestions that were accepted during that period. For example, if during Period I the high influencer made 15 suggestions and of these 10 were accepted, then his acceptance rate would be .67, indicating that two thirds or 67 per cent of his suggestions were accepted by the group.

A very influential leader probably has both a high influence ratio and a high acceptance rate. But of the two, the influence ratio seems to be the more stable and the more crucial indication of leadership. Hence, the

leader or high influencer is always the participant with the highest influence ratio except in the case of a tie. Then the typing participant with the highest acceptance rate is the high influencer.

Results

The Centralization Hypothesis

High influencers have more influence during periods of crisis than during periods of noncrisis.

As indicated above, influence ratios and acceptance rates are standard measures of influence. Also, the crisis groups experienced a crisis during Period II but the control groups did not. Hence, the most obvious implication of the centralization hypothesis is that during Period II the high influencers in the crisis groups should have higher influence ratios and higher acceptance rates than the high influencers in the control groups.

The mean influence ratios for the high influencers during Period II are 3.3 for the crisis groups and 3.0 for the controls. The difference is in the predicted direction, but the probability is .07 which is greater than .05 where the null hypothesis could be rejected.[4]

The mean acceptance rates for the high influencers during Period II are .44 for the crisis groups and .43 for the controls. The probability of an alpha error exceeds .50. Hence, the data, when tabulated by experimental periods, do not support the centralization hypothesis.

Of course, the data could also be used to calculate the influence ratios and the acceptance rates for the high influencers during each of the six task periods. Since the task periods 4, 5, and 6 correspond to Period II, another obvious implication of the centralization hypothesis is that during task periods 4, 5, and 6, the high influencers in the crisis groups should have higher influence ratios and higher acceptance rates than the high influencers in the control groups.

The differences in the mean influence ratios shown in Figure 1 support the centralization hypothesis. In addition to their being in the right direction, the probability is sufficiently small to reject the null hypothesis.

The differences in the mean acceptance rates in Figure 2 support the centralization hypothesis. The differences are in the expected direction for task periods 5 and 6. The probability is sufficiently small to reject the null hypothesis. However, this is not true for task period 4. The difference, although it is not significant, is not even in the predicted direction. This indicates that the difference in influence ratios of the high influ-

[4] This and all the other probabilities of alpha errors (except the one noted in Table 1) were calculated using the Mann-Whitney U test (17, 116–126). The data meet all the assumptions of this distribution-free statistic.

encers in the crisis and control groups is due to a lack of suggestions on the part of the high influencers in the control groups rather than a decreased suggestibility on the part of their fellow participants.

But why should the data support the centralization hypothesis when tabulated by task period but not support it when tabulated by the longer experimental period? The reason is the replacement of the old leaders by the new leaders which is discussed below.

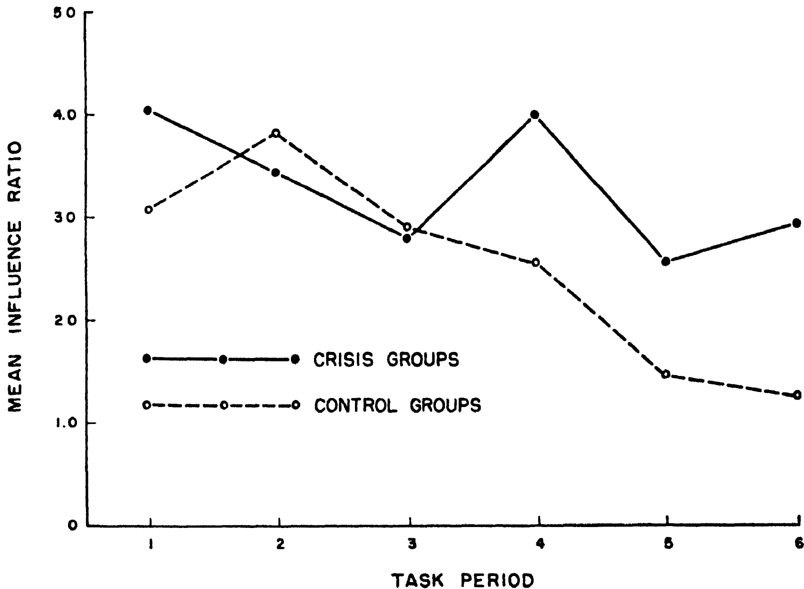


FIG. 1. Mean influence ratios for high influencers in crisis and control groups by task periods.

Note: Differences between crisis and control groups are significant for periods 4, 5, and 6 (beyond .05 level).

The evidence indicates that replacement does not occur immediately but only after the old leader fails to solve the crisis problem. The old leader usually has a high influence ratio and acceptance rate at first, usually during task period 4, but from that point on has a relatively low influence ratio and acceptance rate. The new leader has a low influence ratio and acceptance rate at first but then has a relatively high influence ratio and acceptance rate for the remaining task periods. Thus tabulating the data for the entire experimental period (Period II) gives the old and the new leaders' influence ratios and acceptance rates not for the time each were leaders but for the time they were both leaders and nonleaders. Therefore, tabulating the data by the longer experimental period is

inappropriate or, at least, less appropriate than tabulating the data by the shorter task periods.

One last thing before discussing the evidence for the replacement hypothesis. In Figures 1 and 2 notice the high influence ratios and acceptance rates for the first three task periods. They are as high as the influence ratios and the acceptance rates of the crisis groups for the last three task periods. Although unintentional, we evidently created crises for both

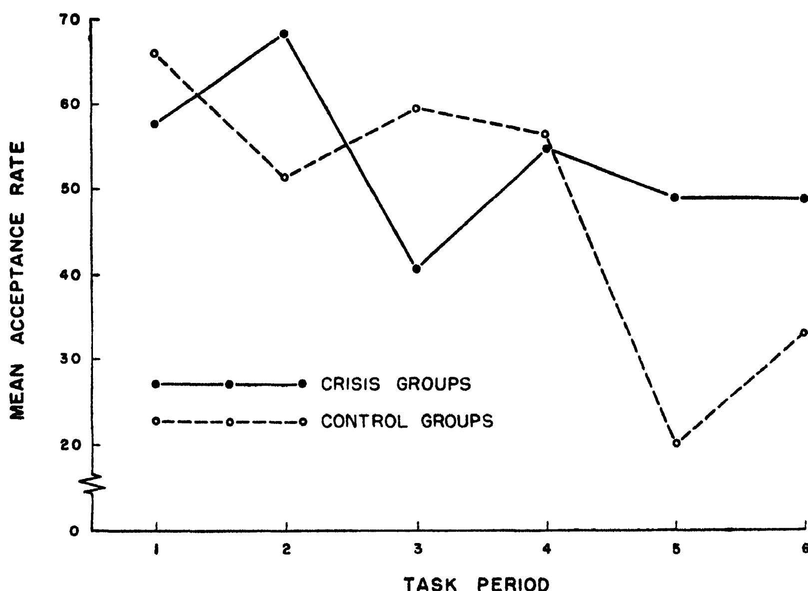


Fig. 2. Mean acceptance rates for high influencers in crisis and control groups by task periods.

Note: Differences between crisis and control groups are significant for periods 5 and 6 (.05 level).

the control and crisis groups for these first three periods. Certainly, in retrospect, a common threat was present (they might not do so well as the high-school students) and the situation was urgent (they had only 30 minutes to learn the rules and make 150 points. Hence, it may be that the control groups were in a noncrisis situation only during the last three task periods.

The Replacement Hypothesis

A group tends to replace its old leader with a new leader if the old leader does not have an obvious solution to the crisis problem.

Of course the most obvious way to test this hypothesis is simply to count the number of crisis and control groups where the leaders or high influencers did and did not change from Period I to Period II. These data, shown in Table 1, support the replacement hypothesis.

However, the data in Table 1 tell but a meager part of the story. A more adequate way to show what happened is to tabulate the influence ratios and the acceptance rates of the participants by their initial influence ranks for Period I and Period II. This shows what happened during Period II to the influence ratios and the acceptance rates of the participants who ranked first, second, and third in influence during Period I. These data appear in Figures 3 and 4.

TABLE 1

REPLACEMENT OF LEADERS IN THE CRISIS AND CONTROL GROUPS

	LEADER REPLACED	LEADER NOT REPLACED
Crisis groups	9	3
Control groups	3	9

(Chi square, one-tailed test, corrected for continuity, P less than .05)

The data in Figure 3 do, of course, support the replacement hypothesis. It appears that the participants who initially were second in influence rank became the new leaders in the crisis groups. That is, in fact, what happened. The participants who were initially second in influence rank became the new leaders in every one of the nine cases where the leader was replaced. This did not happen in the control groups. The participants who were initially second in influence rank either tied for third or became third in influence rank in Period II in ten of the twelve control groups. Also it was the participants who were initially third in influence rank that became the new leaders in the three cases where the leaders were replaced in the control groups.

The mean acceptance rates in Figure 4 tell a similar story except that the differential increase in acceptance rates of the participants who initially ranked third in influence is not significant.

The data in Figures 3 and 4 combine to suggest that a struggle for influence was waged in both the crisis and control groups. During Period I, the participants who ranked first and second in influence evidently vied with one another for the top position. In the crisis groups the crisis evidently caused the participants who originally ranked second to become dominant. The participants who ranked third remained quite isolated. In the control groups, however, the participants who initially ranked first were able to maintain their position of dominance evidently by

forming a coalition with the participants who initially ranked third, perhaps, by giving them support. This evidently froze out the participants who initially ranked second.

These results are somewhat at variance with those of Mills (14). Mills concluded that three-person groups normally develop into a coalition of

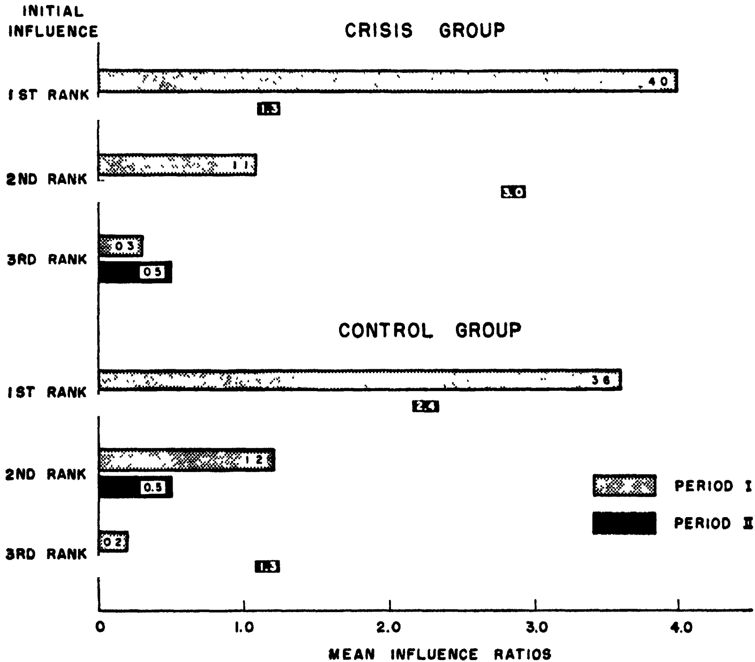


FIG. 3. Mean influence ratios by initial influence rank of members of crisis and control groups by experimental periods.

Note: Change from Period I to Period II is significantly different for participants in crisis and control groups whose initial influence rank was second and third (.05 level).

two and an isolate, and that Simmel's (18, 165–178) *tertius gaudens* (an influence structure where two powerful units are vying with one another for the support of a weak third unit) is rare. (See Chapter 40.) Unfortunately, we do not have the support and opposition data to determine exactly what the coalition structure was. But it is rather obvious that the control groups do exemplify the *tertius gaudens* and, in three cases, the *tertius,* initially the weakest of the three units involved, became the high influencer. It is also very doubtful that the participants initially ranked first and second in the crisis groups actually formed a coalition, at least in the nine cases where replacement occurred. However, in the three cases

where replacement did not occur, a coalition may have existed between the participants who initially ranked first and second.

Of course, our experimental situation differs considerably from Mills'. There were a number of factors present which could, conceivably, account for the differential results.

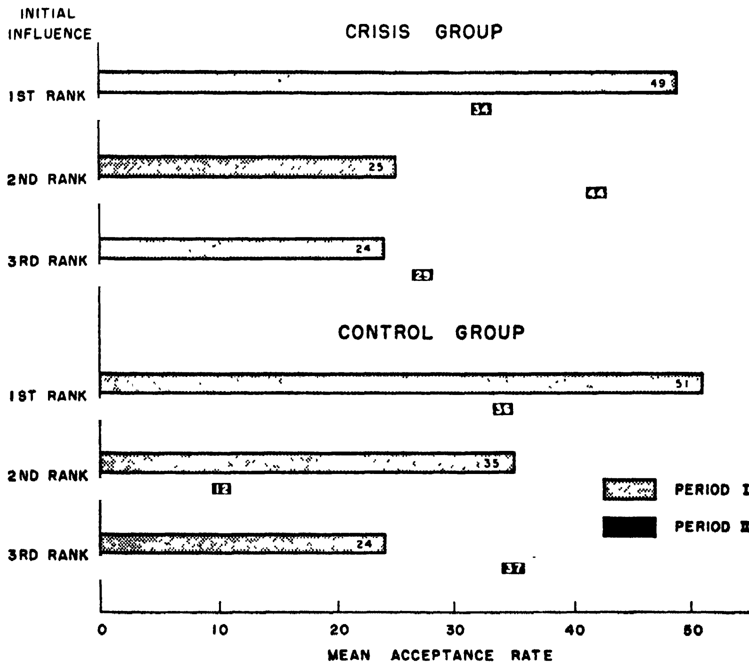


FIG. 4. Mean acceptance rates by initial influence rank of members of crisis and control groups by experimental period.

Note: Change from Period I to Period II is significantly different for participants in crisis and control groups whose initial influence rank was second (.05 level).

1. *Time pressure.* Our situation was designed to be urgent, and, in general, it was probably much more urgent than was Mills' situation.
2. *Threat.* It was almost entirely absent from Mills' experiment.
3. *Objectivity.* In our experiment, the flashing lights gave the participants rather objective criteria for making decisions. This, of course, was not true in Mills' experiment.

At this point it is impossible to say which, if any, of these factors were responsible for the differential results. Further experimentation is required. However, these results do highlight the importance of attempts to isolate the conditions which produce different influence and coalition

structures. Theory such as that developed by Caplow (3) and experiments such as the one conducted by Vinacke and Arkoff (21) are indicated by the results.

Summary

The purpose herein was to report a laboratory investigation of two hypotheses about leadership during crises, namely: leaders have more influence during periods of crisis than during non-crisis periods, and groups tend to replace their old leader with a new leader if the old leader does not have an obvious solution to a crisis problem. Twenty-four groups were brought into a laboratory situation. Twelve experienced an apparently genuine crisis where there was no solution to the crisis problem. Data from an observational measure of influence give support to both hypotheses.

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31
The Leader's Psychological Distance and Group Effectiveness

Fred E. Fiedler

Experience has shown that the leader is probably the most important single factor influencing team performance. Yet, there are very few scientifically established facts about leadership and the dynamics of groups, and the well substantiated theories in this area are even fewer. While laymen have spoken confidently about leadership traits, and while practically every manager and industrialist prides himself on his ability to pick the good leaders on the basis of a five-minute interview, psychologists have not been successful in their search for leadership traits, despite considerable effort. Gibb (8), in a recent discussion of the literature, states that "reviews such as that by Stogdill (17) reveal that numerous studies of the personalities of leaders have failed to find any consistent patterns of traits which characterize leaders." He goes on to say that leadership traits may well exist, but if they do, none have been recognized. He contends that leadership is a complex job which probably does not require or call out consistent patterns of behavior. In light of the empirical evidence which Stogdill and Gibb reviewed, this statement does not appear unjustified.

And yet, we also know of military leaders who have achieved outstanding successes under various circumstances, in combat as well as in peacetime operations, on the battlefield as well as in administrative jobs. Similarly, there are business executives who have been consistently successful in rebuilding sick organizations and in revitalizing demoralized departments, while there are other men who could not organize a game of ring-around-the-rosie. It would be difficult to ignore these cases out of hand.

This paper will attempt to re-examine the leadership problem in light of a recent series of investigations. We will here propose a redefinition of the leadership-trait concept in the belief that a somewhat different approach will lead to more promising results. The paper will briefly describe

This chapter was prepared especially for this volume.

a program of research on group effectiveness which was conducted from 1951 to 1958 under a contract with the Office of Naval Research,[1] and it will discuss some of the implications of the findings in the concluding section.

The Research Program

It has become a psychological truism that a person's behavior is influenced not by some objectively definable reality but rather by the individual's perception of reality. Ambiguous stimuli increase the likelihood that perceptual distortions will occur, and we assume that these distortions reflect in part the inner needs, emotional states and attitudes of the perceiver. Among the most ambiguous of our everyday stimuli, as Festinger (3) and others have pointed out, are the feelings and attitudes of others. Moreover, it is frequently difficult, and often socially taboo, to discuss one's feelings toward others openly with them. As a result, distortions in interpersonal perception are frequent, and they provide an important avenue for the measurement of attitudes, and hence also, of the individual's interpersonal relations with these others.

The interpersonal relationship between the leader and his followers is likely to play an important part in affecting the motivation of group members and their ability to work together on a common task. It seems of crucial importance, therefore, to find reliable indices of the leader-follower relationship with which we can measure relevant dimensions of this interaction.

The studies to be described below have utilized two types of measures. The first of these are the well known sociometric preference ratings which indicate an individual's overt expression of liking, trust, and confidence in another. The second are indirect attitude measures, based on the way in which various individuals perceive and judge others: the so-called interpersonal perception scores.

The particular measures of interpersonal perception which we shall employ here were developed in the course of a study on clinical psychologists (12). We had hoped to find methods for assessing diagnostic competence by asking patients to describe themselves on an array of personality trait statements which the clinician was then asked to predict. To

[1] Project NR 170-106, N6-ori-07135, "Social perception and group effectiveness." From 1951 to 1957, the years during which this project was in operation, eleven staff members and ten research assistants participated in the planning and execution of these studies. Particular acknowledgments are due to Eleanor P. Godfrey, Irving Lazar, George Leavitt, Dorothy McBride, Willard G. Warrington, Walter A. Cleven, and Edwin B. Hutchins, who assumed major responsibility for various aspects of the research, and to Lee J. Cronbach, the project's director during its first two years, and a consultant throughout its operation.

check whether it would be easier to predict individuals whose self-descriptions were similar to one's own, we also asked the clinician to describe himself. The descriptions were made by means of statements derived from Murray's list of needs (14, 142–242). They included statements such as, "I usually influence others more than they influence me," or "I enjoy a good hot argument."

While our efforts to find a reliable measure of diagnostic competence were unsuccessful, we did discover that reputedly good therapists tended to see their patients as much more similar to themselves than did reputedly less competent therapists. The sample consisted of 22 psychiatrists, psychologists, and social workers, who ranged from the well-trained and highly skilled practitioners to students who were on their first few cases. The correlation between reputed therapeutic competence and the therapist's perception of similarity between himself and his patient was .59 (4). In other words, the reputedly good therapist saw relatively much, the reputedly poorer therapist saw relatively little similarity between himself and his patient. This perceived similarity was unrelated to the actual similarity in self-descriptions. Subsequent interviews with the therapists suggested that the good therapists were more acceptant of, and tended to feel closer to, their patients. It seemed as if the good therapists said to their patients, "Look, you and I are very much alike, though you may have a few minor problems which may need straightening out." The proper therapists acted as if saying to their patients, "I am normal—but you're neurotic. We just don't belong to the same class of people."

It is, of course, true that we feel closer to persons we like than to those we do not like. Do we then see people we like as more similar to ourselves than people we don't like?

To answer this question, we asked a group of college men who lived in the same fraternity house, to name their best and their least liked fraternity brothers. Each of the 26 men in the house was then asked to describe himself, as well as his best and his least liked fraternity brothers, using the same statements as in the previous study. As hypothesized, these men saw significantly more similarity between themselves and their most chosen, than between themselves and their least chosen fellow group members (7).

On the basis of these studies, it seemed clear that these "Assumed Similarity" scores measured an important dimension in interpersonal relations. It seemed advisable, therefore, to investigate further whether the tendency to perceive others as similar or different would play an important role in other types of interpersonal situations. Specifically, we decided to work with groups performing objectively measurable tasks in which the effects of interpersonal perception could be assessed with a minimum of ambiguity. These studies proceeded from investigations of sim-

ple, unstructured teams, with informal leaders, to formally structured military crews and industrial work groups, and finally to complex organizations in which one group is subordinate to another. To make this paper more easily readable, a brief description of the main psychological measure is presented before the discussion of the various studies on leadership.

Assumed Similarity Scores

As indicated above, the interpersonal perception measures, used in these studies, are based on the similarity which an individual sees between himself and another, or between two other persons whom he has been asked to describe. The subject is given a set of identical scale sheets which contain personal adjectives or statements descriptive of personality traits. He is generally asked to indicate on a six-point scale the extent to which each of the scale items describes himself, or some other person. Assumed Similarity (AS) scores are then derived by comparing two descriptions made by the same person. These comparisons have most recently been made by means of a coefficient of profile similarity, D, developed independently by Cronbach and Gleser (2) and Osgood and Suci (16). The greater the likeness between two descriptions, the higher is the individual's Assumed Similarity score.

A number of different test formats have been utilized, all of which have yielded comparable data. The latest, and thus far most efficient of these, contains 20 sets of personality adjectives and their antonyms, with each pair separated by a six-point scale. This scale is presented in Fig. 1.

We shall here deal primarily with the score, Assumed Similarity between Opposites, or ASo. This score is obtained by asking the subject to describe the person with whom he could best get a job done. He is then asked to describe also the person with whom he has, or has had, the greatest difficulty in working together. His most and least preferred co-workers may be individuals with whom he currently works, or they may be people he has known in the past. The above-mentioned form follows the format of Osgood's Semantic Differential (16). It requires less than five minutes of the subject's time, and a very little time to score, i.e., three or four minutes by hand, and between ¼th of a second to 15 seconds by card processing or electronic computer equipment.

To obtain ASo, corresponding items on the two scale sheets are compared, and the differences between scores on corresponding item pairs are squared and summed. The square root of the squared and summed differences provides a reasonably normal distribution of scores. To illustrate, let us assume the item scores given in Fig. 2. The scale items are arbitrarily scored from one to six, beginning on the left side of the scale. In the

FIGURE 1

SCALE SHEET FOR OBTAINING ASSUMED SIMILARITY SCORES

How we think of our co-workers is important. Think of someone with whom you have been able to work *best;* a man with whom you might get a job done easily and well, and describe him on this form. This may be someone you have known in the past, or someone you know now.

Friendly	___:___:___:___:___:___	Unfriendly
Cooperative	___:___:___:___:___:___	Uncooperative
Quits easily	___:___:___:___:___:___	Keeps trying
Calm	___:___:___:___:___:___	Upset
Confident	___:___:___:___:___:___	Unsure
Immature	___:___:___:___:___:___	Mature
Bold	___:___:___:___:___:___	Timid
Ungrateful	___:___:___:___:___:___	Grateful
Energetic	___:___:___:___:___:___	Tired
Impatient	___:___:___:___:___:___	Patient
Thoughtless	___:___:___:___:___:___	Thoughtful
Frank	___:___:___:___:___:___	Secretive
Careless	___:___:___:___:___:___	Careful
Easygoing	___:___:___:___:___:___	Quick-tempered
Practical	___:___:___:___:___:___	Impractical
Boastful	___:___:___:___:___:___	Modest
Intelligent	___:___:___:___:___:___	Unintelligent
Gloomy	___:___:___:___:___:___	Cheerful
Responsible	___:___:___:___:___:___	Undependable
Efficient	___:___:___:___:___:___	Inefficient

illustration, D, which equals the ASo score, is 11. Note that a large D score indicates that the subject assumes *low* similarity, while a small D score would show that the subject assumes a *high* degree of similarity between the two persons he described. The split-half reliability of a 20-item scale of this type ranged from .86 to .93 for various samples (6).

As will be recalled, individuals who are liked and accepted are perceived as more similar than people who are not liked or rejected. Various studies of Assumed Similarity scores have shown that a low ASo score is practically synonymous with an implicit rejection of the least preferred co-worker. ASo and the Assumed Similarity between self-description and least preferred co-worker are correlated nearly to the extent of the individual reliabilities of these scores. Thus, the low ASo person is psychologically distant and rejecting to those with whom he cannot work easily, while the high ASo person is either more tolerant of poor co-workers, or he accepts or rejects individuals on bases other than their ability to work with them. The work relationship is likely, therefore, to be more important to the low ASo person than to the individual with high ASo. Since all Assumed Similarity scores are positively correlated, the low ASo person tends also in general to be psychologically more distant from others. Steiner[2] has recently shown that the low ASo person has many acquaintances but few friends; he likes to be with others but he does not want to become emotionally dependent on them. This and similar findings have led to the interpretation that the low ASo person is relatively distant and reserved in contrast to the high ASo man who forms close and intimate

FIGURE 2

ILLUSTRATION FOR COMPUTING ASSUMED SIMILARITY BETWEEN OPPOSITES' SCORES

ITEM	MOST PREFERRED CO-WORKER SCORE	LEAST PREFERRED CO-WORKER SCORE	DIFFERENCE	SQUARED DIFFERENCE
Friendly-Unfriendly	2	4	2	4
Cooperative-Uncooperative	1	5	4	16
Confident-Unsure	4	3	1	1
.	.	.	.	.
.	.	.	.	.
			Sum of D^2 =	121
			D =	11

[2] Steiner, Ivan D. Unpublished research, Univ. of Illinois.

relations, and has a tendency to become emotionally involved with others (cf. 6).

It should be pointed out, moreover, that ASo is essentially a test response set: it is relatively independent of item content, and it is consistent over a range of different situations. In light of its consistency and stability over different situations Assumed Similarity between Opposites may be considered a personality trait measure within the generally accepted sense of the term (20).

Informal Teams

Basketball teams. Our first group effectiveness study utilized 14 high school basketball teams in Central Illinois. We chose to work with these groups because an excellent criterion of team effectiveness is readily available. A good team wins, while a poorer team looses most of its games. The criterion is a public one. The players as well as the onlookers know which of the teams won, and in the course of the season, certain teams clearly emerge as exceptionally good. The teams are also fairly well matched since they play each other in leagues of high schools which are roughly equal in size and pools of potential players.

A sample of 14 teams were tested at the beginning of the season. Only two teams had played one or two games at the time of testing. All members of the "first team," i.e., 8 to 18 men, were asked to participate. They were given a general explanation of the purposes of the research, and assured of the confidentiality of their responses. Each player was asked to name the members of the team with whom he could work best, and the team members with whom he had most difficulty working together. He was then asked to describe himself, as well as his most and his least preferred co-workers.

In line with the prevailing opinion, we expected that members of good teams would have relatively close interpersonal relations with each other. We hypothesized that the members of teams which accepted one another and felt close to others in the team, would also feel more secure, and that this security would allow them to devote proportionately greater efforts to the task than to activities designed to consolidate their own status within the team.

While this was a beautiful hypothesis, it failed to be supported. Much to our surprise we found that the good teams had, on the sociometric questionnaire, chosen as their informal leaders the low ASo persons, while the poorer teams had selected the warmer, more accepting, high ASo persons as informal leaders. The correlation between the informal leader's ASo score and the proportion of games the team had won by mid-season was −.69, a very high relationship for studies of this nature. It was there-

fore decided to repeat the study with a second sample of high school basketball teams. Seven teams from the upper third and five from the lower third of the state's distribution were selected. The testing procedure and instructions were identical in both studies. The criterion of team effectiveness was again the team's standing at mid-season.

As before, this led to a negative correlation (–.58) between the informal leader's ASo score and the criterion of team effectiveness; the *t*, testing the significance of the point biserial correlation, was significant at the .05 level.

Surveying teams. The question immediately arose whether the results which we had obtained were specific for the highly competitive basketball teams which require of their players primarily physical skill and coordination, or whether they were more general. To answer this question, we studied a different set of informal groups, namely 22 student surveying parties. In contrast to basketball teams, these groups are quite small, consisting of three to four men. Their work requires a minimum of physical coordination, but considerable spacial orientation and judgment, as well as mathematical skill. Furthermore, the teams are not in competition with each other, nor do the men within a team compete with one another.

The criterion of surveying effectiveness is the accuracy with which the land is mapped and measured. This was evaluated here by the instructors in charge of the program. Since each instructor had had considerable experience in surveying, and supervised only three or four teams, the criterion score is probably valid.

As in the previous basketball studies, sociometric ratings and Assumed Similarity scores were obtained from all team members. One major innovation was introduced at that time: team members were asked to describe the best and poorest co-workers *they had ever had,* not necessarily someone within the group, as had been the case in the basketball studies.

In light of the basketball study findings, we hypothesized that teams with psychologically distant (low ASo) leaders would be more accurate than teams with psychologically more accepting, warmer persons as informal leaders. This hypothesis was clearly supported. Table 1 presents the results of the two basketball studies as well as those of the surveying parties.

The fact that the good teams tended to choose relatively distant informal leaders also suggested that the better teams might be somewhat less congenial and less comfortable for its members. We, therefore, computed an index of group cohesiveness, based on the ratio of sociometric choices the members gave to men within their own team, as against the number of choices made to outsiders. As expected, we find here a slight negative correlation (–.23) between team accuracy and group cohesiveness. Interestingly enough, the students' ratings of team accuracy correlated –.34

with the instructors' ratings of accuracy, but +.39 with the instructors' ratings of congeniality among team members. While none of these correlations are significant, they suggest that the good teams in effect seem to trade, or sacrifice, some of the personally more comfortable intra-team

TABLE 1

CORRELATION OF INFORMAL LEADER'S ASo SCORE WITH TEAM EFFECTIVENESS CRITERIA

SAMPLE	CRITERION	STATISTIC	CORRELATION	N	P
Basketball Teams I	Percentage of games won at mid-season	Rho	−.69	14	(.01) *
Basketball Teams II	Percentage of games won at mid-season	r_{pb}	−.58	12	.05
Surveying Parties	Instructor's rating of accuracy	r	−.51	22	by t test .025

* This probability statement must be interpreted with caution since the first basketball study was exploratory.

relations, for the later satisfaction which can be derived from outside the team as a reward for good team performance. These data also give some support to Stogdill's hypothesis that team integration and output are unrelated, if not competing types of team achievement (18).

Groups with Formal Team Organization

As the previous studies had shown, informal groups with psychologically distant leaders were more effective than those with psychologically closer, more accepting leaders. But will psychologically distant men, who are appointed to leadership positions, also increase the effectiveness of their groups? The question at issue was whether the choice of psychologically distant men reflected a group norm or attitude, or whether the informal leaders, who happened to be psychologically more distant, were relatively better able to weld their groups into effective units.

B-29 bomber crews. The first study in this series utilized 53 medium heavy bomber crews as subjects. These units consist of 11 men whose leader is the aircraft commander. Under him are four officers: the pilot, navigator, radar observer, and bombardier. The flight engineer, radio operator, and four gunners make up the enlisted complement of the crew.

The primary task of these bomber crews is to deliver bombs on target, guided either by radar equipment or by means of the visual bomb sight. The main criterion we used was a circular error score indicating the distance by which the bomb would have missed its target. These scores, which are computed on the basis of triangulations from radio ground

stations, and can be corrected for weather and equipment variations, have a reliability of approximately .45 (13).

As in previous studies, sociometric preference scores and Assumed Similarity measures were obtained from all crew members. The hypothesis was that Aircraft Commanders with low ASo scores would have more effective crews than would commanders with high ASo scores. While this hypothesis was supported at the .05 point ($r = -.23$), inspection of the data indicated that some other factors were involved which influenced the relationship. It was hoped that a more detailed investigation of the data would lead to a more precise determination of the conditions under which the formal leader's ASo score was related to team effectiveness.

The first hypothesis was that the correlation would be higher if we limited the sample to only those crews in which the formally appointed leader was sociometrically endorsed by his men. This would indicate that the formal leader was also accepted as the group's informal leader. However, this procedure yielded no improvement in the results.

After considerable further exploration of the data, the idea suggested itself that we must not only consider the crew's acceptance of its leader, but also the relationship between the leader and the particular crew members who are crucial in performing the criterion relevant tasks. These crew members, to whom we shall here refer as "keymen," will, of course, differ from task to task. Thus, in the radar bombing mission, only the radar observer and the navigator can act as keymen since they are the only crew members who have radar bombing equipment. In visual bombing, only the bombardier, who handles the bomb sight, can be the keyman. If the aircraft commander rated these keymen highly on the sociometric preference forms, it would indicate that he had a good relationship with these men. This might be because he approved of, and endorsed their crew performance, or because he felt personally attracted to them.

As before, we utilized only those crews in which the aircraft commander was informal as well as formal leader. When we now further divided these crews into those in which the aircraft commander sociometrically chose his keymen, the radar observer and navigator, the correlation between the aircraft commander's ASo score and the radar bomb score was −.81. However, where the aircraft commander did not sociometrically endorse his keymen, the correlation was positive, i.e., .43.

How can we explain these findings? First of all, it must be emphasized that any study, in which a leader attribute is correlated with a group performance score, implicitly assumes a free channel of communication from leader to followers. That is, the leader's personality attribute or attitude must be communicated, and it must be perceived by his subordinates, if it is to affect their performance. A group which sociometrically endorses its leader is also likely to "listen to him," that is, the group members will

be ready to act in accordance with the leader's attitudes as they perceive them. Moreover, where the leader endorses his keyman, the keyman probably does his work in a manner which the leader approves. Hence, this would explain why crews in which the leader endorses his keyman show high correlation between the accepted leader's ASo score and radar bombing performance. But this would not explain the positive correlation which obtains in crews in which the accepted aircraft commander does not endorse his keyman. Obviously, these data indicate that we are dealing with a much more complex phenomenon. In the studies of basketball and surveying teams we had found that the psychologically distant leaders had better teams than the more permissive, psychologically closer leaders. We measured psychological distance by means of ASo scores. But sociometric preference ratings also can be interpreted as indices of psychological distance. We obviously feel more distant toward somebody we do not like than toward somebody whom we would choose as a partner for various work and leisure time activities. An aircraft commander who did not sociometrically endorse his keymen would therefore be more distant from them than would be the case of a commander who rated his keymen highly. The high ASo leader, who is generally close to his work companions, but does not endorse his keymen, thus maintains a moderate psychological distance from them. A similar condition would exist in the case of a low ASo leader who feels distant from his co-workers in general, but who sociometrically endorses his keymen. Hence there would be a positive correlation between such a leader's ASo score and group effectiveness if he did not endorse his keyman, and a negative correlation if he did.

High ASo as well as high sociometric endorsement would add up to too close a psychological relationship, while low ASo with low sociometric endorsement would provide too great a psychological distance.

At this point we should also ask why psychological distance might be relevant to team performance. The most plausible answer seems to be that we cannot adequately control and discipline people to whom we have strong emotional ties. If a man is emotionally dependent on another, he cannot afford to antagonize him since this might deprive him of the other man's support. Similarly, we can evaluate only those people objectively, and we can control only those, on whose good will we do not depend. The rules against nepotism often are attempts to prevent situations in which a subordinate cannot be adequately controlled or disciplined. And the military regulations, which create social barriers between officers and enlisted men, are probably effective more because they prevent the superior from becoming too familiar with his subordinate than because the subordinate's familiarity with his superior might breed contempt (5). It can also be seen why the leader, who can maintain a mod-

erate psychological distance from his men, will be able to get better team performance. In military crews, in which personnel turnover is extremely high, too great a distance between leader and keyman may well lead to disrupted communication, i.e., the psychologically distant leader may completely avoid the men he does not like, or who do not perform according to his expectations. The psychologically close leader, who has a tendency to become emotionally involved with his keymen, would, on the other hand, benefit by working with people whom he can take or leave alone. We, therefore, seem to be working here with an optimum psychological distance which is defined by the interaction of ASo and sociometric preference ratings.

The above were, of course, based on *ad hoc* speculations. It became, therefore, necessary to check these findings as carefully as possible on other data. One rough replication could be performed using data from the original sample of B-29 crews. In addition to radar bombing performance, a second, though considerably poorer criterion was available. This criterion measure indicates the visual bombing performance, the "percentage satisfactory visual bomb runs." The keyman for this crew task is the bombardier. Since well over 50 per cent of the crews achieved perfect scores, this criterion is obviously not too reliable. However it is uncorrelated with radar bomb scores, and does, therefore, provide a means for checking the adequacy of the hypothesis.

Here again, we found that the ASo scores of sociometrically accepted leaders, who endorsed the bombardier, correlated negatively with crew performance. Groups in which the accepted aircraft commanders did not endorse their bombardiers yielded positive correlations.

Army tank crews. A completely independent cross validation study of these findings was possible in connection with an Army experiment designed to compare different types of tank equipment. A group of 25 tank crews were constituted for the purpose of testing five different models of tanks on 25 different target runs. Crews and equipment were matched and extraneous factors were controlled by means of a careful Greco-Latin Square design. As in the case of the first basketball study, these crew members were tested shortly after the crews had been assembled and before any trials were run.

The criteria of crew effectiveness were (*a*) the average time required to hit each of the 25 targets, and (*b*) the average time to travel from target to target. The correlation between these two criteria was −.08. The keymen for these two tasks were, of course, also different. The gunner was the keyman for the "time per hit" criterion, the driver the keyman for the "travel time" criterion.

Our hypothesis was that the ASo scores of sociometrically accepted tank commanders would correlate negatively with the criterion if they en-

dorsed their keymen. The leader's ASo and crew effectiveness would correlate positively in crews in which the tank commanders did not endorse their keymen.

As can be seen on Table 2, this hypothesis was confirmed for both criteria. The table also lists the bomber crew findings to provide a basis for comparison.

Military crews are, of course, unique in many respects. In the crews we tested, the commander had no discretion over the assignment of his men to his crew, or the assignment of his men to positions within the crew. Where he can choose his keyman more readily, as is the case in less rigidly structured crews, in which the keyman can be any group member

TABLE 2

CORRELATIONS BETWEEN ASo SCORES OF SOCIOMETRICALLY ACCEPTED FORMAL LEADERS OF BOMBER AND TANK CREWS AND GROUP PERFORMANCE CRITERIA

Sample	Criterion	Keyman	Leader's Preference for Keyman					
			Positive		Neutral		Negative	
			Rho	*N*	Rho	*N*	Rho	*N*
B-29 crews	RBS	Radar observer and navigator	−.81	10	−.14	6	.43	6
B-29 crews	%SVC	Bombardier	−.52	7	.47	9	.30	5
Tank crews	Time per hit	Gunner	−.60	6	.11	6	.60	5
Tank crews	Travel time	Driver	−.33	5	.39	6	.43	6

RBS—Radar Bomb Scores
% SVC—Percentage Satisfactory Visual Camera Runs
Time per hit—Average time required to hit 25 targets
Travel time—Average time required to drive from target to target

whom the leader likes, we would expect to find only negative correlations. This is, indeed, the case as is shown by a study of infantry squads by Havron, Lybrand, and Cohen (10), and a study of antiaircraft artillery crews by Hutchins (11). In rifle squads, and to some extent also in antiaircraft artillery units, men are less fixed to particular positions, leaving the crew leader some discretion in choosing his keymen.

But military crews also differ from other organizations in terms of their excessively high personnel turnover. Thus, in one recent study, where 483 crew members were tested, only 200 were available for retesting at the end of a three-months' interval. In very stable groups, such as open hearth shops in which men work together for 10 to 15 years, the sociometric preference pattern should play a less important role. Over a period of years, group members will either adjust to one another, or else they will man-

age to transfer out of a group in which they are not wanted, or in which they do not feel comfortable.

Open hearth shops. A study was conducted on 16 shifts of a large open hearth steel mill (1). These shifts came from four shops which were quite similar in working conditions and performance demands. Each of these shifts contained three subgroups: the melters and their furance crews which are concerned with the manufacture of the steel; the stock crews which supply and charge the furnace; and the pit crews which are responsible for tapping the furnace and pouring the steel into ingots. The Senior Melter is the man in charge of the steel manufacture and the total operation of the shift. Under him are two Junior Melters, each in charge of six to eight furnace crews. Coordinate with the Senior Melter is the General Foreman to whom the Pit and Stock Foremen report.

We tested only the foremen of these crews. The main criterion of effectiveness, according to company officials as well as the foremen, is the so-called tap-to-tap time which provides a measure of the tonnage of steel produced per unit of time. An analysis of over 25,000 batches of steel, computed for alternative months, showed a split-half reliability of .82.

TABLE 3

CORRELATIONS BETWEEN ASo SCORES OF VARIOUS OPEN HEARTH STEEL SHOP SUPERVISORS AND SHIFT'S AVERAGE TAP-TO-TAP TIME

SUPERVISOR	*N*	Rho	*P*
Senior Melter	15	−.54	.05
General Foreman	15	−.13	—
Stock Foreman	15	−.42	—
Pit Foreman	14	−.72	.01
Supervisor Average ASo Score	16	−.71	.01

The correlation between the Senior Melters' ASo scores and the shift's average tap-to-tap time was −.52. The correlation between the Pit Foremen's ASo scores and tap-to-tap time was −.72. (See Table 3.) Where we again limited the sample to the Senior Melters who were accepted by the foremen on their shift, and who in turn endorsed their Junior Melters, this correlation rose to a majestic −.89, however, based on only six cases. Statistically, −.89 is, of course, not significantly higher than −.52, since we are dealing with a very small sample, but the increase occurred in the expected direction. Obviously, the informal group structure is of less importance in the very stable steel crews, which often remain together for as long as five to fifteen years, than in more shortlived organizations, which may remain intact for only a few months or one or two years.

Complex Organizations

The studies summarized thus far show that group effectiveness is correlated with two interacting variables. These are the leader's psychological distance from his men, and especially from the person whom the leader considers to be a poor co-worker, and secondly, the informal group structure. But our studies have shown that the leader's interpersonal attitudes can affect the group's performance only when the leader is, himself, accepted by the group. He must be the group's informal as well as its formal leader. Leadership, only to a limited extent, consists in issuing direct orders, and in the actual inspection and evaluation of a man's work. These are clearly important aspects of leadership behavior, but it is the "inspiring" leader, or the strong leader we talk about, not the man "who can really tell Joe how to adjust the setting on the lathe." Only in groups in which the leader is very influential can his inspiring attitudes or any other of his personality attributes affect the behavior of the men who, in the final analysis, perform the criterion relevant tasks. Up to now, we have concerned ourselves primarily with the leader whose authority is based on his subordinates' acceptance of him. More generally, however, groups are an integral part of a larger organization which can potentially enhance the leader's authority or undercut his power. One further study will be presented here which clearly illustrates this point.

The consumer cooperatives study. We studied 32 relatively small corporations which are members of the Illinois Farm Supply Company (9). This is an organization which consists of 101 member companies, each of which typically serves one county in the state. Each of the companies is owned by farmers within its county. It has its own board of directors which is, in turn, responsible for the selection of the general manager and his assistant managers, and the supervision and policy guidance of the company. The companies in our study sold the same products, had similar sales and personnel policies, general operating procedures, and reporting and accounting systems. In each of the companies in the sample, the general manager had occupied his position for at least two years prior to testing. The headquarters of this federation, among its other duties, maintains accurate records of sales and operating costs for each company, making it possible to obtain reliable criteria of company effectiveness. On recommendation of the state office, we used the company's net income and its operating expenses (both as a percentage of total sales) as criteria. To minimize minor yearly fluctuations in sales volume due to climatic and economic conditions, each of the criterion indices was averaged over a three-year period.

All company officials who were contacted indicated that the general manager is the formal leader of the company. We hypothesized, therefore,

that his ASo score would correlate negatively with company effectiveness provided that the company manager could exert sufficient influence over his group. According to the hypothesis, the general manager's influence could be enhanced or abridged not only by his subordinates' attitudes toward him, but also by the confidence and trust shown in him by the key personnel of the board of directors. In some respects, the group structure may here be seen as the independent variable, and the correlation coefficient between ASo and group effectiveness as the dependent variable. We hypothesize a negative relationship between the "tightness" of the informal group structure, i.e., the manager's influence in the organization, and the correlation between ASo and company effectiveness. The greater the manager's influence, the lower (i.e., greater in the negative direction) should be the correlation between his ASo score and his organization's effectiveness.

As in previous studies, the informal group structure was measured by means of sociometric preference ratings, and Assumed Similarity scores were obtained from all managers and board members.

This hypothesis was clearly supported. When all companies were included in the sample, the correlations for Net Income and Operating Expenses were essentially zero; where the general manager enjoyed the endorsement of the board's most influential person, the correlations went to −.39 and −.24; where the general manager enjoyed the support of the board's informal leader as well as of his assistant managers, the correlations were −.70 and −.59; and in the situation, analogous to that of the bomber crew study, where the general manager in addition also endorsed his key assistant manager, the correlations were −.74 and −.73. By itself, neither the ASo score, nor the sociometric choice pattern, leads to very high prediction. This is obtained only where the informal structure of the group permits the manager's attitude to influence the group. The various conditions described above, can be seen as different degrees to which the manager can influence the company. If the influence is great, the correlation between ASo and group effectiveness will be also substantial. Under these conditions, attitudes reflected by low ASo scores will lead to effective, while attitudes reflected by high ASo scores will lead to ineffective group performance.

This does not mean, however, that the psychologically distant, low ASo, person will be effective in every position of leadership or responsibility. On the contrary, a previous study had suggested that effective leaders of policy and decision-making groups would be relatively permissive and "therapeutic" in relations with their co-workers. It is also interesting to note, in this connection, that the rules for "brain storming" (15) read almost like a manual of psychotherapy. (Thus, all ideas about a particular subject should be freely brought forward, and the more the

better. No matter how silly or impractical some of the ideas may sound, there must be no criticisms, no evaluations or adverse judgements.) Also, we had found that tasks which require a receptive attitude on the part of the leader are performed more effectively by the high ASo man than by his low ASo counterpart. As a result, the hypothesis stated that the informal leaders of boards of directors who had high ASo would be more effective than those with low ASo. Here, again, however, the board leader's attitude could make itself felt only where the sociometric structure of the group is conducive to noise-free communication of attitudes from the top to the bottom echelon of the organization. As Table 4 indicates, the results are generally in the expected direction, although only one of the conditions yielded significant results.

TABLE 4

CORRELATIONS (RHO) BETWEEN COMPANY EFFECTIVENESS CRITERIA AND ASo SCORES OF ORGANIZATIONAL LEADERS IN CONSUMER COOPERATIVES

SAMPLE	*N*	GENERAL MANAGER		INFORMAL LEADERS OF BOARD	
		Net Income	Operating Efficiency	Net Income	Operating Efficiency
All companies	32(31) †	−.14	−.16	−.06	.05
Informal leader endorses general manager	23	−.39	−.24	−.08	.20
Informal leader of board endorses general manager who is accepted by his group	13	−.70 *	−.59	.20	.07
Manager accepted by board leader and subordinates endorse keyman	8	−.74 *	−.73 *	.62	.64 *

* Correlations significant at .05 point or below
† One board's informal leadership could not be ascertained on the basis of sociometric ratings.

Discussion

What are the theoretical implications of this research program?

We have here shown that psychologically distant leaders of *task* groups are more effective than the leaders who tend toward warmer, psychologically closer interpersonal relations with their subordinates. A number of hypotheses have been advanced to account for these findings: e.g., that psychologically closer, warmer relations make it difficult for the leader to discipline his subordinates, and that a tendency to become emotionally

dependent on one or two group members encourages rivalries and the charge of favoritism. What, however, are the differences in behavior of high and low ASo leaders? We made case studies of two companies with accepted general managers in order to obtain a better picture of the major differences which are involved.

Above all, the low ASo manager tended to be considerably more role oriented in his dealings with the board as well as with his subordinates. He saw himself as a professional administrator whose job it was to propose policy to the board and to see that the board decisions were adequately implemented. He saw the board president as a collaborator, and as his chief assistant in orienting board members to company problems. He held regular staff meetings with his assistant managers, whom he also brought along to board meetings to present reports of the work in their departments. He demanded and got considerable freedom of action from his board, and he gave his assistant managers considerable freedom and responsibility. He expected them to make occasional mistakes and to learn from them. He wanted ambitious assistant managers, and he felt that they ought to be ready for promotion to a bigger job within three years, even though this would entail more work on his part.

In contrast, the high ASo manager was much more human relations oriented. He felt that the best way to conduct business was by means of informal discussions, and he saw his own job primarily in terms of insuring smooth interpersonal relations with the board, employees, and customers. In contrast to the low ASo manager, he chose many of his friends and leisure time companions from among board members and his assistant managers. In general, he showed a strong trend for close informal ties with people. Some of his behavior and attitudes suggested a need of dominating and possessing people. Thus, formal staff meetings were rare, and he insisted on being consulted by his assistant managers on relatively minor decisions since "two heads are always better than one." His assistant managers did not attend board meetings since there were many things which might not be of concern to them, and he felt that an assistant manager should stay a minimum of four years before moving up to a more responsible position.

These observations, comparing high and low ASo leaders, are fully consonant with the results of various other studies. Psychological distance appears to lead to better role relations and an emphasis on the task. This is well illustrated by the experience of one airforce officer in command of an air base who systematically varied his psychological distance from his chief subordinates. When he had very close relations with these officers, they seemed to feel secure, and they did not worry overly about the efficiency of their units. As soon as he became more reserved and role oriented, his subcommanders began to worry whether anything had gone

awry, they became less secure of their standing in the organization, and channeled their anxieties into paying more attention to their work. As a result, there was a noticeable increase in the efficiency of the base. This is, of course, an anecdotal account, yet it illustrates well the type of reaction which greater psychological distance seems to evoke.

Besides the identification of Assumed Similarity between Opposites as an important leadership variable, an equally, if not indeed more important contribution of this research program, concerns the interpretation of the role which the group structure plays in mediating leader attitudes. As we have shown, the ASo score correlates with group performance only when the leader is sociometrically endorsed by the men on whom his authority depends. Where this condition does not obtain, that is, where his subordinates will not "listen" to him, his attitudes also cannot affect the group's behavior. Similarly, where the leader is not trusted by his own superiors, his power over the group is sharply curtailed. This has, of course, been suspected for some time in the past. Its relation to the prediction of group effectiveness from leader attributes has been less well understood.

As was pointed out in the first section of this paper, the notion of leadership traits has been practically discarded in social psychology. Well over one-hundred studies have failed to provide any evidence that such traits exist. It would seem well worth asking whether we have been looking at the right thing. Leadership traits have generally been defined as personality characteristics which differentiate leaders from non-leaders, or more accurately, men occupying leadership slots from those not at the time occupying leadership positions. Yet, it is of course obvious (especially in retrospect) that some men who are followers today may be in leadership positions tomorrow, and that men rise to leadership for any number of reasons, only some of which are related to personality factors. Thus, having a father who owns 51 per cent of the stock is frequently helpful in becoming a corporation executive, as is marrying into a family with large investments. Warner and Abegglan (19) have shown that nearly one-half of American business executives had strong family connections with their enterprise. Being available and having the prerequisite technical training at a particular time undoubtedly also plays a large part. Thus, achieving a leadership position is, at least in part, unrelated to personality attributes.

Whether a man is successful or unsuccessful, once he has achieved a leadership position, would appear to be much more closely related to his personal attributes. Should we, therefore, not rather concern ourselves with leadership effectiveness traits, i.e., the traits which differentiate between the effective and the ineffective leaders? But here we must carefully differentiate between the warm body in the leadership slot, the figure head, and the man who can in fact influence the behavior of his

group. Only where an individual is accepted by his group as its leader (as may be indicated by the sociometric preference ratings) can we expect that he will have sufficient power to influence his group's behavior. Under these conditions, psychological distance, as measured by ASo, might well qualify as a leadership effectiveness trait. The other major question, why some men are able to gain acceptance of their associates while others do not, remains as yet unsolved. (High ASo and low ASo leaders are equally likely to be accepted by their men.) Some situational factors are undoubtedly involved: certain groups, by tradition, do not accept their formal leaders; other men follow leaders whose previous relationships were such that it would be extremely difficult for their successors to step into their shoes. Yet, in most cases, this is an individual problem between the appointed leader and his subordinates, a problem which deserves considerably more research. In conjunction with ASo, the prediction of an individual's ability to gain his group's acceptance would provide a powerful tool for the selection of task group leaders. Although the study of consumer cooperatives provides a number of important hypotheses regarding the leadership of policy and decision-making groups, this problem, too, must await further research.

In summary, we have here presented a series of studies which indicate that psychologically distant leaders are more effective in promoting the productivity of task groups than are leaders with psychologically closer interpersonal relations. Prediction of leadership effectiveness—or group effectiveness—was only possible, however, when dealing with groups in which the leader had the *de facto* power and authority, as indicated by the group's informal structure. A re-interpretation of the leadership trait problem has been presented which proposes that leadership traits can become operative in influencing group productivity only when the leader has considerable power in the group.

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The Bases of Social Power

John R. P. French, Jr. and Bertram Raven

The processes of power are pervasive, complex, and often disguised in our society. Accordingly one finds in political science, in sociology, and in social psychology a variety of distinctions among different types of social power or among qualitatively different processes of social influence (1, 6, 14, 20, 23, 29, 30, 38, 40). Our main purpose is to identify the major types of power and to define them systematically so that we may compare them according to the changes which they produce and the other effects which accompany the use of power. The phenomena of power and influence involve a dyadic relation between two agents which may be viewed from two points of view: (*a*) What determines the behavior of the agent who exerts power? (*b*) What determines the reactions of the recipient of this behavior? We take this second point of view and formulate our theory in terms of the life space of P, the person upon whom the power is exerted. In this way we hope to define basic concepts of power which will be adequate to explain many of the phenomena of social influence, including some which have been described in other less genotypic terms.

Recent empirical work, especially on small groups, has demonstrated the necessity of distinguishing different types of power in order to account for the different effects found in studies of social influence. Yet there is no doubt that more empirical knowledge will be needed to make final decisions concerning the necessary differentiations, but this knowledge will be obtained only by research based on some preliminary theoretical distinctions. We present such preliminary concepts and some of the hypotheses they suggest.

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Power, Influence, and Change

Psychological Change

Since we shall define power in terms of influence, and influence in terms of psychological change, we begin with a discussion of change. We want to define change at a level of generality which includes changes in behavior, opinions, attitudes, goals, needs, values and all other aspects of the person's psychological field. We shall use the word "system" to refer to any such part of the life space.[1] Following Lewin (26, 305) the state of a system at time 1 will be denoted $s_1(a)$.

Psychological change is defined as any alteration of the state of some system *a* over time. The amount of change is measured by the size of the difference between the states of the system *a* at time 1 and at time 2: $ch(a) = s_2(a) - s_1(a)$.

Change in any psychological system may be conceptualized in terms of psychological forces. But it is important to note that the change must be coordinated to the resultant force of all the forces operating at the moment. Change in an opinion, for example, may be determined jointly by a driving force induced by another person, a restraining force corresponding to anchorage in a group opinion, and an own force stemming from the person's needs.

Social Influence

Our theory of social influence and power is limited to influence on the person, P, produced by a social agent, O, where O can be either another person, a role, a norm, a group or a part of a group. We do not consider social influence exerted on a group.

The influence of O on system *a* in the life space of P is defined as the resultant force on system *a* which has its source in an act of O. This resultant force induced by O consists of two components: a force to change the system in the direction induced by O and an opposing resistance set up by the same act of O.

By this definition the influence of O does not include P's own forces nor the forces induced by other social agents. Accordingly the "influence" of O must be clearly distinguished from O's "control" of P. O may be able to induce strong forces on P to carry out an activity (i.e., O exerts strong influence on P); but if the opposing forces induced by another person or by P's own needs are stronger, then P will locomote in an opposite direction (i.e., O does not have control over P). Thus psychological change in

[1] The word "system" is here used to refer to a whole or to a part of the whole.

P can be taken as an operational definition of the social influence of O on P only when the effects of other forces have been eliminated.

It is assumed that any system is interdependent with other parts of the life space so that a change in one may produce changes in others. However, this theory focuses on the primary changes in a system which are produced directly by social influence; it is less concerned with secondary changes which are indirectly effected in the other systems or with primary changes produced by nonsocial influences.

Commonly social influence takes place through an intentional act on the part of O. However, we do not want to limit our definition of "act" to such conscious behavior. Indeed, influence might result from the passive presence of O, with no evidence of speech or overt movement. A policeman's standing on a corner may be considered an act of an agent for the speeding motorist. Such acts of the inducing agent will vary in strength, for O may not always utilize all of his power. The policeman, for example, may merely stand and watch or act more strongly by blowing his whistle at the motorist.

The influence exerted by an act need not be in the direction intended by O. The direction of the resultant force on P will depend on the relative magnitude of the induced force set up by the act of O and the resisting force in the opposite direction which is generated by that same act. In cases where O intends to influence P in a given direction, a resultant force in the same direction may be termed positive influence whereas a resultant force in the opposite direction may be termed negative influence.

If O produces the intended change, he has exerted positive control; but if he produces a change in the opposite direction, as for example in the negativism of young children or in the phenomena of negative reference groups, he has exerted negative control.

Social Power

The *strength of power* of O/P in some system *a* is defined as the maximum potential ability of O to influence P in *a*.

By this definition influence is kinetic power, just as power is potential influence. It is assumed that O is capable of various acts which, because of some more or less enduring relation to P, are able to exert influence on P.[2] O's power is measured by his maximum possible influence, though he may often choose to exert less than his full power.

[2] The concept of power has the conceptual property of *potentiality;* but it seems useful to restrict this potential influence to more or less enduring power relations between O and P by excluding from the definition of power those cases where the potential influence is so momentary or so changing that it cannot be predicted from the existing relationship. Power is a useful concept for describing social structure only if it

An equivalent definition of power may be stated in terms of the resultant of two forces set up by the act of O: one in the direction of O's influence attempt and another resisting force in the opposite direction. Power is the maximum resultant of these two forces:

$$\text{Power of O/P}\,(a) = (f_{a,x} - f_{\overline{a,x}})^{\max}$$

where the source of both forces is an act of O.

Thus the power of O with respect to system *a* of P is equal to the maximum resultant force of two forces set up by any possible act of O: (*a*) the force which O can set up on the system *a* to change in the direction x, (*b*) the resisting force [3] in the opposite direction. Whenever the first component force is greater than the second, positive power exists; but if the second component force is greater than the first, then O has negative power over P.

It is necessary to define power with respect to a specified system because the power of O/P may vary greatly from one system to another. O may have great power to control the behavior of P but little power to control his opinions. Of course a high power of O/P does not imply a low power of P/O; the two variables are conceptually independent.

For certain purposes it is convenient to define the range of power as the set of all systems within which O has power of strength greater than zero. A husband may have a broad range of power over his wife, but a narrow range of power over his employer. We shall use the term "magnitude of power" to denote the summation of O's power over P in all systems of his range.

The dependence of s(a) on O

Several investigators have been concerned with differences between superficial conformity and "deeper" changes produced by social influence (**1, 5, 6, 11, 12, 20, 21, 22, 23, 26, 36, 37**). The kinds of systems which are changed and the stability of these changes have been handled by distinctions such as "public *vs.* private attitudes," "overt *vs.* covert behavior," "compliance *vs.* internalization," and "own *vs.* induced forces." Though stated as dichotomies, all of these distinctions suggest an under-

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has a certain stability over time; it is useless if every momentary social stimulus is viewed as actualizing social power.

[3] We define resistance to an attempted induction as a force in the opposite direction which is set up by the same act of O. It must be distinguished from opposition which is defined as existing opposing forces which do not have their source in the same act of O. For example, a boy might resist his mother's order to eat spinach because of the manner of the induction attempt, and at the same time he might oppose it because he didn't like spinach.

lying dimension of the degree of dependence of the state of a system on O.

We assume that any change in the state of a system is produced by a change in some factor upon which it is functionally dependent. The state of an opinion, for example, may change because of a change either in some internal factor such as a need or in some external factor such as the arguments of O. Likewise the maintenance of the same state of a system is produced by the stability or lack of change in the internal and external factors. In general, then, psychological change and stability can be conceptualized in terms of dynamic dependence. Our interest is focused on the special case of dependence on an external agent, O (31).

In many cases the initial state of the system has the character of a quasi-stationary equilibrium with a central force field around s_1 (a) (26, 106). In such cases we may derive a tendency toward retrogression to the original state as soon as the force induced by O is removed.[4] Let us suppose that O exerts influence producing a new state of the system, $s_2(a)$. Is $s_2(a)$ now dependent on the continued presence of O? In principle we could answer this question be removing any traces of O from the life space of P and by observing the consequent state of the system at time 3. If $s_3(a)$ retrogresses completely back to $s_1(a)$, then we may conclude that maintenance of $s_2(a)$ was completely dependent on O; but if $s_3(a)$ equals $s_2(a)$, this lack of change shows that $s_2(a)$ has become completely independent of O. In general the degree of dependence of $s_2(a)$ on O, following O's influence, may be defined as equal to the amount of retrogression following the removal of O from the life space of P:

$$\text{Degree of dependence of } s_2(a) \text{ on O} = s_2(a) - s_3(a).$$

A given degree of dependence at time 2 may later change, for example, through the gradual weakening of O's influence. At this later time, the degree of dependence of $s_4(a)$ on O, would still be equal to the amount of retrogression toward the initial state of equilibrium $s_1(a)$. Operational measures of the degree of dependence on O will, of course, have to be taken under conditions where all other factors are held constant.

Consider the example of three separated employees who have been working at the same steady level of production despite normal, small fluctuations in the work environment. The supervisor orders each to increase his production, and the level of each goes up from 100 to 115 pieces per day. After a week of producing at the new rate of 115 pieces per day, the supervisor is removed for a week. The production of em-

[4] Miller (33) assumes that all living systems have this character. However, it may be that some systems in the life space do not have this elasticity.

ployee A immediately returns to 100 but B and C return to only 110 pieces per day. Other things being equal, we can infer that A's new rate was completely dependent on his supervisor whereas the new rate of B and C was dependent on the supervisor only to the extent of 5 pieces. Let us further assume that when the supervisor returned, the production of B and of C returned to 115 without further orders from the supervisor. Now another month goes by during which B and C maintain a steady 115 pieces per day. However, there is a difference between them: B's level of production still depends on O to the extent of 5 pieces whereas C has come to rely on his own sense of obligation to obey the order of his legitimate supervisor rather than on the supervisor's external pressure for the maintenance of his 115 pieces per day. Accordingly, the next time the supervisor departs, B's production again drops to 110 but C's remains at 115 pieces per day. In cases like employee B, the degree of dependence is contingent on the perceived probability that O will observe the state of the system and note P's conformity (5, 6, 11, 12, 23). The level of observability will in turn depend on both the nature of the system (e.g., the difference between a covert opinion and overt behavior) and on the environmental barriers to observation (e.g., O is too far away from P). In other cases, for example that of employee C, the new behavior pattern is highly dependent on his supervisor, but the degree of dependence of the new state will be related not to the level of observability but rather to factors inside P, in this case a sense of duty to perform an act legitimately prescribed by O. The internalization of social norms is a related process of decreasing degree of dependence of behavior on an external O and increasing dependence on an internal value; it is usually assumed that internalization is accompanied by a decrease in the effects of level of observability (37).

The concepts "dependence of a system on O" and "observability as a basis for dependence" will be useful in understanding the stability of conformity. In the next section we shall discuss various types of power and the types of conformity which they are likely to produce.

The Bases of Power

By the basis of power we mean the relationship between O and P which is the source of that power. It is rare that we can say with certainty that a given empirical case of power is limited to one source. Normally, the relation between O and P will be characterized by several qualitatively different variables which are bases of power (30). Although there are undoubtedly many possible bases of power which may be distinguished, we shall here define five which seem especially common and important. These five bases of O's power are: (*a*) reward power, based

on P's perception that O has the ability to mediate rewards for him; (*b*) coercive power, based on P's perception that O has the ability to mediate punishments for him; (*c*) legitimate power, based on the perception by P that O has a legitimate right to prescribe behavior for him; (*d*) referent power, based on P's identification with O; (*e*) expert power, based on the perception that O has some special knowledge or expertness.

Our first concern is to define the bases which give rise to a given type of power. Next, we describe each type of power according to its strength, range, and the degree of dependence of the new state of the system which is most likely to occur with each type of power. We shall also examine the other effects which the exercise of a given type of power may have upon P and his relationship to O. Finally, we shall point out the interrelationships between different types of power, and the effects of use of one type of power by O upon other bases of power which he might have over P. Thus we shall both define a set of concepts and propose a series of hypotheses. Most of these hypotheses have not been systematically tested, although there is a good deal of evidence in favor of several. No attempt will be made to summarize that evidence here.

Reward Power

Reward power is defined as power whose basis is the ability to reward. The strength of the reward power of O/P increases with the magnitude of the rewards which P perceives that O can mediate for him. Reward power depends on O's ability to administer positive valences and to remove or decrease negative valences. The strength of reward power also depends upon the probability that O can mediate the reward, as perceived by P. A common example of reward power is the addition of a piece-work rate in the factory as an incentive to increase production.

The new state of the system induced by a promise of reward (for example the factory worker's increased level of production) will be highly dependent on O. Since O mediates the reward, he controls the probability that P will receive it. Thus P's new rate of production will be dependent on his subjective probability that O will reward him for conformity minus his subjective probability that O will reward him even if he returns to his old level. Both probabilities will be greatly affected by the level of observability of P's behavior. Incidentally, a piece rate often seems to have more effect on production than a merit rating system because it yields a higher probability of reward for conformity and a much lower probability of reward for nonconformity.

The utilization of actual rewards (instead of promises) by O will tend over time to increase the attraction of P toward O and therefore the

referent power of O over P. As we shall note later, such referent power will permit O to induce changes which are relatively independent. Neither rewards nor promises will arouse resistance in P, provided P considers it legitimate for O to offer rewards.

The range of reward power is specific to those regions within which O can reward P for conforming. The use of rewards to change systems within the range of reward power tends to increase reward power by increasing the probability attached to future promises. However, unsuccessful attempts to exert reward power outside the range of power would tend to decrease the power; for example if O offers to reward P for performing an impossible act, this will reduce for P the probability of receiving future rewards promised by O.

Coercive Power

Coercive power is similar to reward power in that it also involves O's ability to manipulate the attainment of valences. Coercive power of O/P stems from the expectation on the part of P that he will be punished by O if he fails to conform to the influence attempt. Thus negative valences will exist in given regions of P's life space, corresponding to the threatened punishment by O. The strength of coercive power depends on the magnitude of the negative valence of the threatened punishment multiplied by the perceived probability that P can avoid the punishment by conformity, i.e., the probability of punishment for nonconformity minus the probability of punishment for conformity (11). Just as an officer of a piece-rate bonus in a factory can serve as a basis for reward power, so the ability to fire a worker if he falls below a given level of production will result in coercive power.

Coercive power leads to dependent change also; and the degree of dependence varies with the level of observability of P's conformity. An excellent illustration of coercive power leading to dependent change is provided by a clothes presser in a factory observed by Coch and French (3). As her efficiency rating climbed above average for the group the other workers began to "scapegoat" her. That the resulting plateau in her production was not independent of the group was evident once she was removed from the presence of the other workers. Her production immediately climbed to new heights.[5]

At times, there is some difficulty in distinguishing between reward power and coercive power. Is the withholding of a reward really equiva-

[5] Though the primary influence of coercive power is dependent, it often produces secondary changes which are independent. Brainwashing, for example, utilizes coercive power to produce many primary changes in the life space of the prisoner, but these dependent changes can lead to identification with the agressor and hence to secondary changes in ideology which are independent.

lent to a punishment? Is the withdrawal of punishment equivalent to a reward? The answer must be a psychological one—it depends upon the situation as it exists for P. But ordinarily we would answer these questions in the affirmative; for P, receiving a reward is a positive valence as is the relief of suffering. There is some evidence (5) that conformity to group norms in order to gain acceptance (reward power) should be distinguished from conformity as a means of forestalling rejection (coercive power).

The distinction between these two types of power is important because the dynamics are different. The concept of "sanctions" sometimes lumps the two together despite their opposite effects. While reward power may eventually result in an independent system, the effects of coercive power will continue to be dependent. Reward power will tend to increase the attraction of P toward O; coercive power will decrease this attraction (11, 12). The valence of the region of behavior will become more negative, acquiring some negative valence from the threatened punishment. The negative valence of punishment would also spread to other regions of the life space. Lewin (25) has pointed out this distinction between the effects of rewards and punishment. In the case of threatened punishment, there will be a resultant force on P to leave the field entirely. Thus, to achieve conformity, O must not only place a strong negative valence in certain regions through threat of punishment, but O must also introduce restraining forces, or other strong valences, so as to prevent P from withdrawing completely from O's range of coercive power. Otherwise the probability of receiving the punishment, if P does not conform, will be too low to be effective.

Legitimate Power

Legitimate power is probably the most complex of those treated here, embodying notions from the structural sociologist, the group-norm and role oriented social psychologist, and the clinical psychologist.

There has been considerable investigation and speculation about socially prescribed behavior, particularly that which is specific to a given role or position. Linton (29) distinguishes group norms according to whether they are universals for everyone in the culture, alternatives (the individual having a choice as to whether or not to accept them), or specialties (specific to given positions). Whether we speak of internalized norms, role prescriptions and expectations (34), or internalized pressures (15), the fact remains that each individual sees certain regions toward which he should locomote, some regions toward which he should not locomote, and some regions toward which he may locomote if they are generally attractive for him. This applies to specific behaviors in

which he may, should, or should not engage; it applies to certain attitudes or beliefs which he may, should, or should not hold. The feeling of "oughtness" may be an internalization from his parents, from his teachers, from his religion, or may have been logically developed from some idiosyncratic system of ethics. He will speak of such behaviors with expressions like "should," "ought to," or "has a right to." In many cases, the original source of the requirement is not recalled.

Though we have oversimplified such evaluations of behavior with a positive-neutral-negative trichotomy, the evaluation of behaviors by the person is really more one of degree. This dimension of evaluation, we shall call "legitimacy." Conceptually, we may think of legitimacy as a valence in a region which is induced by some internalized norm or value. This value has the same conceptual property as power, namely an ability to induce force fields (26, 40–41). It may or may not be correct that values (or the superego) are internalized parents, but at least they can set up force fields which have a phenomenal "oughtness" similar to a parent's prescription. Like a value, a need can also induce valences (i.e., force fields) in P's psychological environment, but these valences have more the phenomenal character of noxious or attractive properties of the object or activity. When a need induces a valence in P, for example, when a need makes an object attractive to P, this attraction applies to P but not to other persons. When a value induces a valence, on the other hand, it not only sets up forces on P to engage in the activity, but P may feel that all others ought to behave in the same way. Among other things, this evaluation applies to the legitimate right of some other individual or group to prescribe behavior or beliefs for a person even though the other cannot apply sanctions.

Legitimate power of O/P is here defined as that power which stems from internalized values in P which dictate that O has a legitimate right to influence P and that P has an obligation to accept this influence. We note that legitimate power is very similar to the notion of legitimacy of authority which has long been explored by sociologists, particularly by Weber (41), and more recently by Goldhammer and Shils (14). However, legitimate power is not always a role relation: P may accept an induction from O simply because he had previously promised to help O and he values his word too much to break the promise. In all cases, the notion of legitimacy involves some sort of code or standard, accepted by the individual, by virtue of which the external agent can assert his power. We shall attempt to describe a few of these values here.

Bases for legitimate power. Cultural values constitute one common basis for the legitimate power of one individual over another. O has characteristics which are specified by the culture as giving him the right to prescribe behavior for P, who may not have these characteristics. These

bases, which Weber (41) has called the authority of the "eternal yesterday," include such things as age, intelligence, caste, and physical characteristics. In some cultures, the aged are granted the right to prescribe behavior for others in practically all behavior areas. In most cultures, there are certain areas of behavior in which a person of one sex is granted the right to prescribe behavior for the other sex.

Acceptance of the social structure is another basis for legitimate power. If P accepts as right the social structure of his group, organization, or society, especially the social structure involving a hierarchy of authority, P will accept the legitimate authority of O who occupies a superior office in the hierarchy. Thus legitimate power in a formal organization is largely a relationship between offices rather than between persons. And the acceptance of an office as *right* is a basis for legitimate power—a judge has a right to levy fines, a foreman should assign work, a priest is justified in prescribing religious beliefs, and it is the management's prerogative to make certain decisions (10). However, legitimate power also involves the perceived right of the person to hold the office.

Designation by a legitimizing agent is a third basis for legitimate power. An influencer O may be seen as legitimate in prescribing behavior for P because he has been granted such power by a legitimizing agent whom P accepts. Thus a department head may accept the authority of his vice-president in a certain area because that authority has been specifically delegated by the president. An election is perhaps the most common example of a group's serving to legitimize the authority of one individual or office for other individuals in the group. The success of such legitimizing depends upon the acceptance of the legitimizing agent and procedure. In this case it depends ultimately on certain democratic values concerning election procedures. The election process is one of legitimizing a person's right to an office which already has a legitimate range of power associated with it.

Range of legitimate power of O/P. The areas in which legitimate power may be exercised are generally specified along with the designation of that power. A job description, for example, usually specifies supervisory activities and also designates the person to whom the job-holder is responsible for the duties described. Some bases for legitimate authority carry with them a very broad range. Culturally derived bases for legitimate power are often especially broad. It is not uncommon to find cultures in which a member of a given caste can legitimately prescribe behavior for all members of lower castes in practically all regions. More common, however, are instances of legitimate power where the range is specifically and narrowly prescribed. A sergeant in the army is given a specific set of regions within which he can legitimately prescribe behavior for his men.

The attempted use of legitimate power which is outside of the range of legitimate power will decrease the legitimate power of the authority figure. Such use of power which is not legitimate will also decrease the attractiveness of O (11, 12, 36).

Legitimate power and influence. The new state of the system which results from legitimate power usually has high dependence on O though it may become independent. Here, however, the degree of dependence is not related to the level of observability. Since legitimate power is based on P's values, the source of the forces induced by O include both these internal values and O. O's induction serves to activate the values and to relate them to the system which is influenced, but thereafter the new state of the system may become directly dependent on the values with no mediation by O. Accordingly this new state will be relatively stable and consistent across varying environmental situations since P's values are more stable than his psychological environment.

We have used the term legitimate not only as a basis for the power of an agent, but also to describe the general behaviors of a person. Thus, the individual P may also consider the legitimacy of the attempts to use other types of power by O. In certain cases, P will consider that O has a legitimate right to threaten punishment for nonconformity; in other cases, such use of coercion would not be seen as legitimate. P might change in response to coercive power of O, but it will make a considerable difference in his attitude and conformity if O is not seen as having a legitimate right to use such coercion. In such cases, the attraction of P for O will be particularly diminished, and the influence attempt will arouse more resistance (11). Similarly the utilization of reward power may vary in legitimacy; the word "bribe," for example, denotes an illegitimate reward.

Referent Power

The referent power of O/P has its basis in the identification of P with O. By identification, we mean a feeling of oneness of P with O, or a desire for such an identity. If O is a person toward whom P is highly attracted, P will have a desire to become closely associated with O. If O is an attractive group, P will have a feeling of membership or a desire to join. If P is already closely associated with O he will want to maintain this relationship (40). P's identification with O can be established or maintained if P behaves, believes, and perceives as O does. Accordingly O has the ability to influence P, even though P may be unaware of this referent power. A verbalization of such power by P might be, "I am like O, and therefore I shall behave or believe as O does," or "I want to be like O, and I will be more like O if I behave or believe as O does." The stronger the identification of P with O the greater the referent power of O/P.

Similar types of power have already been investigated under a number of different formulations. Festinger (7) points out that in an ambiguous situation, the individual seeks some sort of "social reality" and may adopt the cognitive structure of the individual or group with which he identifies. In such a case, the lack of clear structure may be threatening to the individual and the agreement of his beliefs with those of a reference group will both satisfy his need for structure and give him added security through increased identification with his group (16, 19).

We must try to distinguish between referent power and other types of power which might be operative at the same time. If a member is attracted to a group and he conforms to its norms only because he fears ridicule or expulsion from the group for nonconformity, we would call this coercive power. On the other hand if he conforms in order to obtain praise for conformity, it is a case of reward power. The basic criterion for distinguishing referent power from both coercive and reward power is the mediation of the punishment and the reward by O: to the extent that O mediates the sanctions (i.e., has means control over P) we are dealing with coercive and reward power; but to the extent that P avoids discomfort or gains satisfaction by conformity based on identification, regardless of O's responses, we are dealing with referent power. Conformity with majority opinion is sometimes based on a respect for the collective wisdom of the group, in which case it is expert power. It is important to distinguish these phenomena, all grouped together elsewhere as "pressures toward uniformity," since the type of change which occurs will be different for different bases of power.

The concepts of "reference group" (39) and "prestige suggestion" may be treated as instances of referent power. In this case, O, the prestigeful person or group, is valued by P; because P desires to be associated or identified with O, he will assume attitudes or beliefs held by O. Similarly a negative reference group which O dislikes and evaluates negatively may exert negative influence on P as a result of negative referent power.

It has been demonstrated that the power which we designate as referent power is especially great when P is attracted to O (2, 7, 8, 9, 13, 23, 30). In our terms, this would mean that the greater the attraction, the greater the identification, and consequently the greater the referent power. In some cases, attraction or prestige may have a specific basis, and the range of referent power will be limited accordingly: a group of campers may have great referent power over a member regarding campcraft, but considerably less effect on other regions (30). However, we hypothesize that the greater the attraction of P toward O, the broader the range of referent power of O/P.

The new state of a system produced by referent power may be dependent on or independent of O; but the degree of dependence is not

affected by the level of observability to O (6, 23). In fact, P is often not consciously aware of the referent power which O exerts over him. There is probably a tendency for some of these dependent changes to become independent of O quite rapidly.

Expert Power

The strength of the expert power of O/P varies with the extent of the knowledge or perception which P attributes to O within a given area. Probably P evaluates O's expertness in relation to his own knowledge as well as against an absolute standard. In any case expert power results in primary social influence on P's cognitive structure and probably not on other types of systems. Of course changes in the cognitive structure can change the direction of forces and hence of locomotion, but such a change of behavior is secondary social influence. Expert power has been demonstrated experimentally (9, 33). Accepting an attorney's advice in legal matters is a common example of expert influence; but there are many instances based on much less knowledge, such as the acceptance by a stranger of directions given by a native villager.

Expert power, where O need not be a member of P's group, is called "informational power" by Deutsch and Gerard (4). This type of expert power must be distinguished from influence based on the content of communication as described by Hovland et al. (17, 18, 23, 24). The influence of the content of a communication upon an opinion is presumably a secondary influence produced after the *primary* influence (i.e., the acceptance of the information). Since power is here defined in terms of the primary changes, the influence of the content on a related opinion is not a case of expert power as we have defined it, but the initial acceptance of the validity of the content does seem to be based on expert power or referent power. In other cases, however, so-called facts may be accepted as self-evident because they fit into P's cognitive structure; if this impersonal acceptance of the truth of the fact is independent of the more or less enduring relationship between O and P, then P's acceptance of the fact is not an actualization of expert power. Thus we distinguish between expert power based on the credibility of O and informational influence which is based on characteristics of the stimulus such as the logic of the argument or the "self-evident facts."

Wherever expert influence occurs it seems to be necessary both for P to think that O knows and for P to trust that O is telling the truth (rather than trying to deceive him).

Expert power will produce a new cognitive structure which is initially relatively dependent on O, but informational influence will produce a more independent structure. The former is likely to become more in-

dependent with the passage of time. In both cases the degree of dependence on O is not affected by the level of observability.

The "sleeper effect" (18, 24) is an interesting case of a change in the degree of dependence of an opinion on O. An unreliable O (who probably had negative referent power but some positive expert power) presented "facts" which were accepted by the subjects and which would normally produce secondary influence on their opinions and beliefs. However, the negative referent power aroused resistance and resulted in negative social influence on their beliefs (i.e., set up a force in the direction opposite to the influence attempt), so that there was little change in the subjects' opinions. With the passage of time, however, the subjects tended to forget the identity of the negative communicator faster than they forgot the contents of his communication, so there was a weakening of the negative referent influence and a consequent delayed positive change in the subjects' beliefs in the direction of the influence attempt ("sleeper effect"). Later, when the identity of the negative communicator was experimentally reinstated, these resisting forces were reinstated, and there was another negative change in belief in a direction opposite to the influence attempt (24).

The range of expert power, we assume, is more delimited than that of referent power. Not only is it restricted to cognitive systems but the expert is seen as having superior knowledge or ability in very specific areas, and his power will be limited to these areas, though some "halo effect" might occur. Recently, some of our renowned physical scientists have found quite painfully that their expert power in physical sciences does not extend to regions involving international politics. Indeed, there is some evidence that the attempted exertion of expert power outside of the range of expert power will reduce that expert power. An undermining of confidence seems to take place.

Summary

We have distinguished five types of power: referent power, expert power, reward power, coercive power, and legitimate power. These distinctions led to the following hypotheses.

1. For all five types, the stronger the basis of power the greater the power.

2. For any type of power the size of the range may vary greatly, but in general referent power will have the broadest range.

3. Any attempt to utilize power outside the range of power will tend to reduce the power.

4. A new state of a system produced by reward power or coercive power will be highly dependent on O, and the more observable P's con-

formity the more dependent the state. For the other three types of power, the new state is usually dependent, at least in the beginning, but in any case the level of observability has no effect on the degree of dependence.

5. Coercion results in decreased attraction of P toward O and high resistance; reward power results in increased attraction and low resistance.

6. The more legitimate the coercion the less it will produce resistance and decreased attraction.

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33
Phases in Group Problem Solving

Robert F. Bales and Fred L. Strodtbeck

The idea that groups go through certain stages or phases in the process of solving problems, or that problem solving would somehow be more effective if some prescribed order were followed, has been current in the literature for some time (4, 5, 8). However, the distinction between predicting an empirical order of phases under given conditions and prescribing an ideal order in terms of value judgments has not in all cases been clearly drawn. Furthermore, it has not always been recognized that different types of conditions or problems may result empirically in different sorts of phase movement. The persistence of these confusions has probably been related to the fact that until recently empirical methods which would give operational substance to the ideas have been lacking.

This paper presents a method of testing for the empirical existence of differentiated phases in group process and some evidence that under certain particular conditions a certain type of phase movement does tend to appear. The type of phase movement described is *not* held to be universal in an empirical sense. Whether it appears empirically depends upon a large number of conditions. Whether this type of phase movement is "optimum" under certain conditions in terms of value standards is a different problem and is not discussed in this paper.

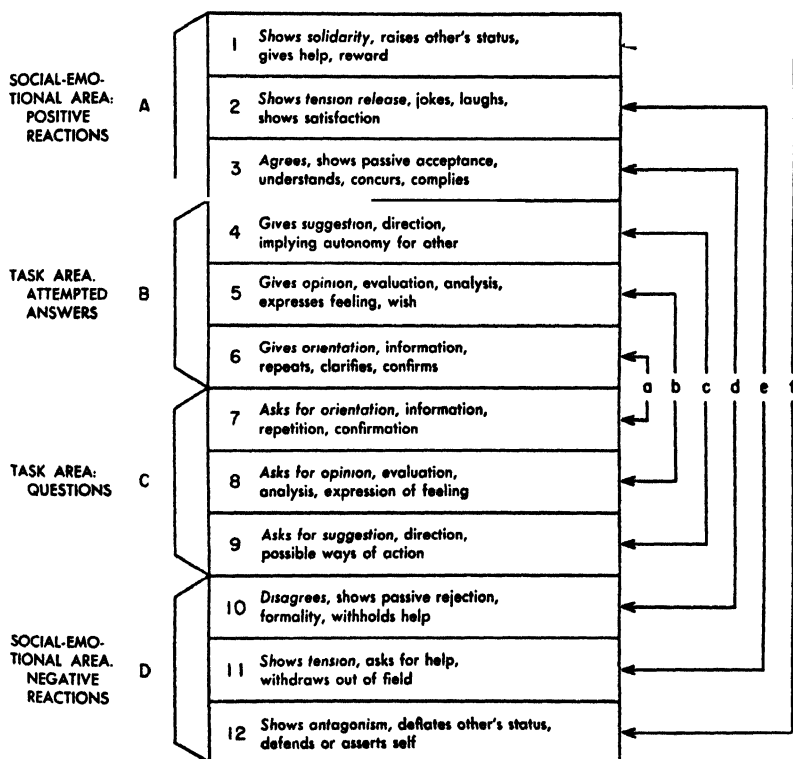
By *phases* in the hypothesis presented below, we mean qualitatively different subperiods within a total continuous period of interaction in which a group proceeds from initiation to completion of a problem involving group decision.

A Phase Hypothesis for Full-fledged Problems

The present phase hypothesis is restricted to instances in which groups work toward the goal of a group decision on a full-fledged problem.

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Briefly stated, the phase hypothesis is the proposition that under these conditions groups tend to move in their interaction from a relative emphasis upon problems of *orientation,* to problems of *evaluation,* and subsequently to problems of *control,* and that concurrent with these transitions, the relative frequencies of both *negative reactions* and *positive reactions* tend to increase. The terms used in the statement of the hypothesis have as their operational referents the acts which are briefly defined in Figure 26.1. There are 12 categories on the observation list.



Key: *a,* problems of orientation, *b,* problems of evaluation, *c,* problems of control, *d,* problems of decision, *e,* problems of tension-management, and *f,* problems of integration.

FIG. 26.1. Interaction process categories defined and grouped by types.

The present hypothesis is stated in terms of five groups of these categories, identified by the brackets on the left and right of the list. Categories *6* and *7* are grouped as dealing with problems of orientation; *5* and *8* deal with problems of evaluation; *4* and *9,* with problems of control; *10, 11,* and *12,* with negative reactions; and *1, 2,* and *3,* with positive reactions.

This is a relatively crude grouping, and it seems likely that further experience will enable us to state the hypothesis in a way which treats each category separately.

This particular phase hypothesis is expected to hold only under *certain conditions,* which we try to identify and state below. In general, we believe that the rates of activity we observe in each of the categories, and the way these rates move, over time, vary with changes in the conditions under which the interaction takes place. A major distinction can be drawn between those conditions which may be regarded as constituted prior to the period of observation, and those which arise and change during the actual period of observation.

Under prior conditions we tend to think of three broad classes of variables: (*a*) the personalities of the individual members in their idiosyncratic aspects; (*b*) those characteristics the members have in common, as a part of their parent culture, as well as of the subculture of the particular group under observation; and (*c*) the organization of the group, that is, the expectations the members have established concerning their social relationships with each other and their different positions in this total constellation of expectations.

In addition to these prior conditions, we recognize (*d*) a series of conditions arising from the nature of the problems faced during the specific period of observation, which change as the group interaction moves through time.

Obviously, we are not able to specify the content of these four classes of conditions with the degree of refinement we should like, but as a first approximation we sketch the following requirements as the conditions under which the present phase hypothesis is expected to hold. Whenever the group or the problem does not meet the requirements, the particular phase movement described above is not expected to appear.

We have no experimental evidence as to the effects of variations in personality composition of the group on phase movement. Our data are all obtained from groups of persons assumed to be "normal." There are more or less obvious reasons for supposing that the hypothesis should not be expected to apply to groups involving persons of subnormal intelligence or seriously disturbed personalities.

We assume the participants will be adult, or near-adult, members of our own culture. This gives us some expectation that they will speak English, have some formal education, etc. As to the particular subculture of the groups, if the group has met before, it seems possible that such features as special procedural customs and training in group discussion methods might directly affect the phase movement. Hence, it may be that certain groups could deliberately evolve procedures to circumvent the expected movement, or to follow it in spite of conditions which would

otherwise prevent it. Obviously, it is necessary to exclude cases of this type.

We require a group in which there is some minimum pressure to maintain its solidarity so that joint decision will have some binding power over the members after the sequence observed, and so that the presence of disagreement, tension, and antagonism will be negatively valued. The status differences among members of the group should not be so great as to deny each member the right to participate and influence the choice of the ultimate decision. It appears likely that serious status struggles within the group may modify the phase movement, although this has not yet been explored. The group size may vary from two to twenty, or may be even larger, perhaps, if there is the possibility of face-to-face interaction among the participants over a common problem.

As to the duration of the period of observation itself, we require the selection for analysis of a single complete "topical cycle of operations," from the recognition of a topical problem to its disposition by the group. We do not mean this requirement to exclude periods in which a group considers several topics involved in a single major decision, but we do require that, when topical problems are considered serially as items on an agenda, the period of discussion on each topic be analyzed separately. Thus, an entire meeting in some cases may be an appropriate period for analysis; in other cases, discussion of a single agenda item may be appropriate. (In addition, we exclude groups not concerned with a fairly specific problem of group planning and decision. For example, we exclude groups in which the aim or main emphasis is on expressive personal interaction, such as therapeutic interviews, play groups, meetings of friends at a cocktail party, and the like.)

Finally, we require a task in which it may be assumed that the functional problems of *orientation*, *evaluation*, and *control* are each to a major degree unsolved at the beginning of observation and are solved in some degree during the period of observation. More specifically—

With regard to *orientation*, members of the group must have some degree of ignorance and uncertainty about the relevant facts, but individually possess facts relevant to decision. A clear example of a group which meets this requirement is a diagnostic council, where the members have seen the patient separately and have made different tests relevant to a decision as to what to do with the patient.

With regard to problems of *evaluation*, we require that the problem not be what is sometimes called an "open and shut" case. We need to be able to assume that the members possess somewhat different values or interests and that the problem is such that it involves several different values and interests as criteria by which the facts of the situation and the proposed course of action are to be judged.

With regard to problems of *control* (of the members over one another and over the common environment), we require that there be both pressure for a group decision and the expectation of further joint action. It is also assumed that there are a number of possible alternatives with different, and perhaps uncertain, degrees of potential frustration or satisfaction associated with various choices.

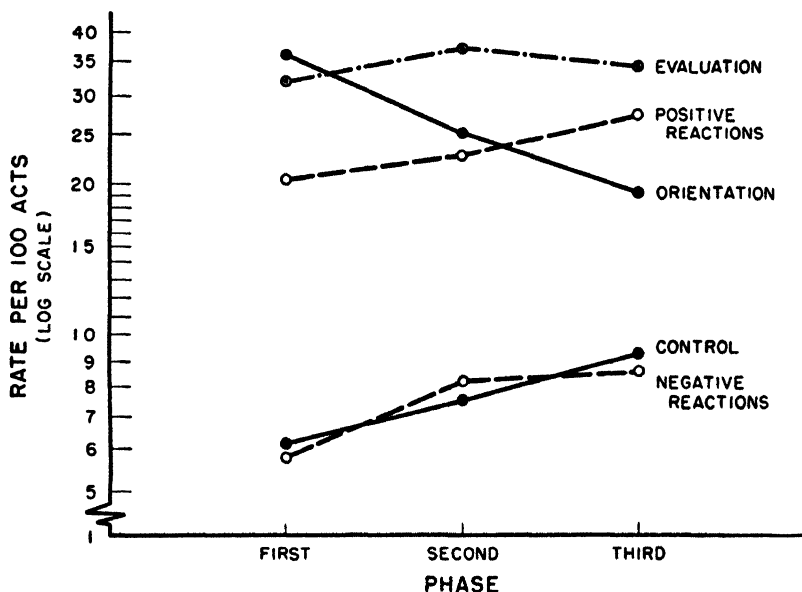


FIG. 26.2. Relative frequency of acts by type and phase, based upon 22 sessions.

When problems lack or greatly minimize any of these three characteristics, we speak of them as being *truncated*. When the three characteristics are present, we speak of the problem as being *full-fledged*. We do not expect the particular phase hypothesis stated above to hold for truncated problems. Presumably, it may be possible to formulate other phase hypotheses which will describe the phase movement for particular kinds of truncated problems.

The above conditions may seem formidable at first glance, but it is our opinion that they are met in group conferences, committees, and the like with sufficient frequency to insure the practical importance of investigating situations of this type.

In order to test the hypothesis empirically, it is necessary to specify the length of a phase. In the absence of any compelling rationale, we have adopted a simple convention: After the observations have been recorded on a moving tape (1), we divide into thirds the cycle of operations which

constitutes the total period to be analyzed, producing the *first, middle,* and *final* phases. The total period is divided so that each phase includes one-third of the acts of the total set. (This is approximately equivalent to a time division into thirds, though not quite, since we have observed that there is some tendency for the interaction to speed up toward the latter part of topical cycles.) Since we have no basis for predicting the absolute number of acts by type for each phase, we implement the hypothesis by designating the phase in which we expect the number of acts of a particular type to be high, intermediate, or low when rank-ordered.

We have drawn Figure 26.2 on the basis of the summary data for all group sessions examined in the present study in order to illustrate something of the magnitude of the variation which may be expected. It should be emphasized that, when we say there is a shift in relative emphasis from problems of orientation in the first phase, to problems of evaluation in the second phase, to problems of control in the third phase, we do not mean that the absolute magnitude for the selected activity is greater than all others in that phase—we mean, rather, that the rate of the selected activity is at its own high point in the designated phase. (It should be noted that the cases upon which Figure 26.2 is based include a number in which the conditions for the hypothesis are not fully met, and yet the phase movement of the aggregate is of the type we specify will hold for individual cases only under full-fledged conditions. This apparent paradox will be discussed later.)

Rationale for the Hypothesis

For an interacting group, the solution of problems of orientation is assumed to bear an enabling relation to the solution of problems of evaluation and control and, in this sense, to be functionally prerequisite to their solution. That is, an individual may be cognitively oriented to a situation and speak of it to others in cognitive terms without committing himself overtly either to evaluation of it, or an attempt to control it; but speaking to the other in evaluative terms implies previous orientation, and the attempt to control the situation by joint action implies both previous orientation and evaluation. Something like this sequence of process may be characteristic of individual human problem solving on the nonovert level. Historically speaking, most of the theories about steps or stages in group problem solving seem to be more or less direct extrapolations of steps or stages assumed to exist in individual mental processes. The present rationale is based directly on conditions present in the overt process of social interaction between individuals through an appreciable lapse of time, and it may be compatible with any number of theories regarding the mental processes of individual problem solving.

In the most general rationale of the whole set of categories (see Fig. 26.1), *3* and *10* are thought of as dealing with problems of *decision; 2* and *11,* with problems of *tension management;* and *1* and *12,* with problems of *integration* or *reintegration* of the group. For the present phase hypothesis, these categories have been grouped, not according to the type of functional problem with which they deal, but according to their implication, positive or negative, for the solution of these types of problems. These problems we call social-emotional problems, to distinguish them from those which are more directly task-connected (see Fig. 26.1, brackets on left).

It is our assumption that efforts to solve problems of orientation, evaluation, and control (that is, attempts to accomplish the task) tend to lead to differentiation of the roles of the participants, both as to the functions they perform and their gross amounts of participation. Both types of differentiation tend to carry status implications which may threaten or disturb the existing order or balance of status relations among members and thus impair the basic solidarity of the group.

This impairment, we assume, tends to grow more marked as the group passes from emphasis on problems of orientation to problems of evaluation, and still more acute as it passes on to its heaviest emphasis on problems of control. This assumption seems to be a more generalized way of stating the findings of certain other studies. For example, Lippitt (9) found negative reactions to autocratic control or leadership in boys clubs under certain conditions, and Rogers and his associates (10) tend to find a minimization of negative reactions on the part of clients when the counselor confines himself to nondirective (or, in our categories, orienting) types of activity. Thus, the present assumption may be regarded as a generalization of this connection between degree of control and negative reactions, and as applying to different points in the process of the same group, not simply to differences between groups.

Thus, as we conceive the process, a series of changes in the social-emotional relationships of the members tend to be set in motion by pressures arising initially from the demands of the external problem or outer situation. As they grow more acute, these social-emotional problems, as well as the task problems, tend to be expressed or dealt with in overt interaction. These, in brief, are the theoretical reasons for expecting that with our crude division of the cycle of operations into three phases, rates in Categories *10, 11,* and *12* will be lowest in the initial period and highest in the final period, moving concomitantly with the emphasis on problems of control.

However, at the extreme end of the final period, assuming that the members' attempts at control over the outer situation and over each other are successful and a final decision is reached, we expect the rates in Cate-

gories *1, 2,* and *3* also to rise to their peak. In other words, the group tends to confirm its agreement and to release in diffuse ways the tensions built up in its prior task-efforts, repairing the damage done to its state of consensus and social integration. We note joking and laughter so frequently at the ends of meetings that they might almost be taken as a signal that the group has completed what it considers to be a task effort, and is ready for disbandment or a new problem. This last-minute activity completes the hypothetical cycle of operations both for the task problems and social-emotional problems. The apparent incongruity of predicting a peak for both negative and positive reactions in the third phase is thus explained. Negative and positive reactions tend to be successive emphases within the crudely defined third phase.

Testing the Phase Hypothesis

To test the phase hypothesis, we have considered *all* the protocols available in our files which had been scored in a form appropriate for this investigation. The number is small, only 22 cases. Some of these cases represent several hours of sustained interaction by one group, while others represent the discussion of single topics taken from longer sessions. The groups involved were originally observed for a number of different purposes. Some were experimentally formed groups with assigned tasks. Some were operating groups that allowed us to sit in and observe. We have given a brief description of the task considered by each of these groups in Table 26.1.

The writers have judged each of the 22 cases separately and have agreed that 8 of the 22 satisfactorily fulfill the conditions outlined in earlier paragraphs. The distinction between cases which meet and cases which fail to meet the conditions can be illustrated by discussion of a few concrete ones.

Cases *8, 10, 11,* and *15* were chess problem solving groups in which the participants were well oriented to the factual aspects of the problem before beginning interaction. Chess problems are almost uniquely "full information" problems, and the participants were skilled chess players. The profile of scores generated in these sessions was uniformly below the expected limit on giving information and orientation, according to empirical norms we have published elsewhere (3). On this basis, the writers classified this problem as being *truncated;* it was assumed not to have the necessary requirement for orientation.

An interesting and partially parallel instance is Case *1.* Here, again, a chess problem which the group solves cooperatively is involved, but the participants are novices who have just been instructed for one hour in the rules of the game. They have their instruction manuals with them and

TABLE 26.1

TRANSPOSITIONS REQUIRED TO ESTABLISH THE ORDER PREDICTED BY THE PHASE HYPOTHESIS FOR 22 SETS OF OBSERVATIONS

Case No.	Fulfills Conditions	Description of Group and Task	No. of Transpositions Required
1	Yes	Five-man chess novice group planning first move of seven-move problem	0 *
2	Yes	Three-man group on first group projective story	1 *
3	Yes	Eight-man academic group planning thesis	2 *
4	Yes	Four-man chess club evaluating past performance and planning future performance	2 *
5	Yes	Seven-man college group in discussion skills planning own operations	2 *
6	Yes	Four-man steering committee planning arrangements for Christmas party	3 *
7	Yes	Four-man chess club evaluating past performance and planning future operation	4
8	No	Four-man chess club solving two-move problem	4
9	No	Three-man group on third group projective story	4
10	No	Four-man chess club solving two-move problem	5
11	No	Four-man chess club solving two-move problem	5
12	No	Three-man group on fourth group projective story	5
13	Yes	Seven-man college group on discussion skills	5
14	No	Three-man chess club constructing chess problem	6
15	No	Four-man chess club solving two-move problem	6
16	No	Three-man group on fifth group projective story	6
17	No	Three-man group on second group projective story	6
18	No	Three-man role-playing group deciding between two fictional alternative purchases	6
19	No	Eight-man academic discussion group on theory	7
20	No	Three-man chess club constructing a chess problem	8
21	No	Three-man chess club constructing a chess problem	10
22	No	Five-man chess novice group planning second move of seven-move problem	11

* Significant at or beyond the .05 level.

they are still uncertain about the identity of the pieces and the best mode of attack. The phase sequence of their interaction up to their decision as to their first move is in complete accord with the hypothesis. In the planning of their second move, however, they were able to draw upon their earlier discussion in which they had discussed future moves as well, and the problem was truncated for them in terms of the reduced emphasis on orientation, just as it had been for the previous chess group described above.

A similar sequence of topical cycles which seemed to involve successively less orientation is seen in Cases *2, 9, 12, 16,* and *17*. In these cases

the same group made up stories to the five cards of the Guetzkow and Henry Group Projection Sketches (6). The interaction only up to the point of completion of the first card (Case 2) was markedly in the expected phase order.

In Cases *14*, *20*, and *21*, members of a chess club were confronted with the task of *constructing* an original chess problem, starting from an empty board. They were fully oriented to the task at the beginning of the sequence, since they were quite familiar with chess problems. They began with suggestions in order to determine initial placements of pieces on the board, and they became more concerned with problems of orientation as more pieces were added to the board and the complications thus increased. Two of these three sequences were the direct reverse of the phase order expected under full-fledged conditions on problems of orientation and control. It may be that certain types of creative problems typically produce this type of approach, and that a different sort of phase hypothesis could be evolved for such tasks. An increasing complexity of orientation needed as the task evolves might be a basic factor in limiting the number of persons who may work together successfully on creative problems.

To test the conformity between the observed orderings and the orderings predicted by our original theoretical analysis, we have employed a model based upon the occurrence of the maxima and minima in the predicted phase rather than a model in which absolute magnitudes were considered. Table 26.2 presents the hypothesis in a form appropriate for this type of test. Table 26.2 may be compared with Figure 26.2 to clarify its meaning.

The following hypothetical example, which involves only one type of act, illustrates this method of analysis.

Phases in Which Acts of Orientation Are:

	HIGH	INTERMEDIATE	LOW
Predicted:	First	Middle	Final
Observed:			
Example I	First	Middle	Final
Example II	Middle	First	Final
Example III	Final	Middle	First

In Example I, the observed values match exactly with the prediction; that is, the high, intermediate, and low values occur in the periods in which they were predicted to occur. In Examples II and III there are departures from the prediction. The main point of this discussion of the model is the justification of the method adopted to evaluate the degree of departure. We believe that it is inappropriate to consider the goodness

of fit in terms of the number of instances in which the predicted values match the observed values. In terms of matches alone, there is no distinction between II and III; in each example one element corresponds with the predicted placement. This is not a satisfactory description, however, since one feels that there is a more serious departure from expectation if the predicted high is interchanged with the predicted low, as in III, than if the predicted high is interchanged with the predicted median, as in II. Fortunately, if we count not the number of matches but the number of *transpositions* of adjacent values required to establish the predicted order, we may take account of the distinction between II and III.

TABLE 26.2

EXPECTED PHASE IN WHICH FREQUENCIES OF ACTS BY TYPE WILL BE HIGH, INTERMEDIATE, AND LOW UNDER CONDITIONS OF THE FULL-FLEDGED PROBLEM

Type of Act	High	Intermediate	Low
Orientation	First	Middle	Final
Evaluation	Middle	Final	First
Control	Final	Middle	First
Negative	Final	Middle	First
Positive	Final	Middle	First

To illustrate the counting of transpositions, Example II can be modified to fit the predicted order by exchanging the middle and first element, whereas for Example III there are three transpositions required: first with middle, first with final, and middle with final. A statistical evaluation of the difference between the predicted and observed orders can be made on the basis of the number of transpositions required. It can be demonstrated [1] that if there are three or fewer transpositions, the null hypothesis may be rejected at the .05 level.

By reference to Table 26.1, it may be noted that six of the eight sessions which were judged to have fulfilled the stated necessary conditions were also significant in the sense that they would require only the three transpositions or less required to reject the null hypothesis of random distribution at the .05 level. Two sessions which we judged to meet the conditions were not significantly different from random expectations.

It is thus apparent that cases which meet the conditions do deviate significantly from random expectations, and that cases which do not meet the conditions do not deviate significantly. In short, one or more alterna-

[1] The statistic employed is essentially a repeated application of Kendall's rank correlation coefficient *tau* (7). Persons wishing to perform computations for orderings of other sizes can obtain the appropriate coefficients of the powers of x to be inserted in the formula from Kendall (7, 388–437).

tive phase hypotheses, accompanied by corresponding specification of conditions, are required before we can duplicate the relatively accurate predictions of the occurrence of maxima and minima which we have made for the eight individual cases in question.

Discussion of Results

The 14 cases which failed to meet the conditions also failed to conform to the phase movement predicted for full-fledged conditions. Nevertheless, when all of the acts of the 22 cases are summed together by type of act and phase, the values for each type of act have maxima and minima which correspond exactly with the particular phase movement under discussion. These data are presented in Table 26.3 and earlier, graphically, in Figure 26.2. How is this paradoxical finding to be interpreted?

It may be that we simply have a sample of cases in which compensating differences happen to exist, and that new aggregates of cases would fail to show the pattern. On the other hand, it may be that certain conditions are

TABLE 26.3

ACTS BY TYPE AND PHASE, TOTAL FOR 22 CASES

TYPE OF ACT	PHASE			TOTAL
	First	Middle	Final	
Orientation	1,668	1,170	916	3,574
Evaluation	1,550	1,792	1,656	4,998
Control	285	364	429	1,078
Negative	275	374	408	1,057
Positive	984	1,058	1,361	3,403
Total *	4,762	4,758	4,770	14,290

* The totals in phases are not quite equal, due to the fact that no systematic technique was employed to distribute the extra acts when the total acts of a session were not divisible by three.

operating which tend to be similar from case to case, in spite of particular differences. There are certain conditions which seem to be more or less inherent in the nature of the process of interaction or communication itself. If this were not so, it would be difficult to produce a set of categories of the sort used in the present observations, which we believe to be very general and applicable in formal terms at least, to any interaction.

We suggest that parts of the interaction process itself tend to affect other parts in such a way that, at the time of any given act, the acts which have gone before, or which have not yet occurred but are expected to come, constitute a set of "internal" conditions which operate in addition to whatever "external" conditions there may be of the sorts specified in

the statement of the hypothesis. We know that in the more microscopic act-to-act sequences this is the case. Questions tend to be followed by attempted answers, and these in turn tend to be followed by positive or negative reactions or more questions (2, 129–131). These are "internal tendencies" of the process itself on a microscopic time span. It may be that similar internal tendencies operate on the more molar level of longer chains of sequences leading to group decision.

It can now be pointed out that the rationale of the phase hypothesis presented earlier is essentially an argument based on an assumption that there are internal tendencies of interaction considered as a system distributed between persons and through time. If one started with the assumption that interaction does constitute a social system and that it will tend to exhibit certain systematic properties on that account, how would he go about demonstrating this empirically? The critical logical difficulty would seem to be that the system he is trying to investigate never operates apart from external conditions which are expected to influence the behavior which actually occurs. The effects of the external conditions are always compounded with, or confounded with, the effects of the internal conditions.

One approach, perhaps, is to attempt to observe the system operating in a set of conditions complete enough and balanced in such a way as to call out the full range of internal tendencies or possibilities of the interaction process, so that the empirical observations might display in most articulate form the effects of the internal conditions. Here it may be pointed out that the description of the set of conditions we have called the *full-fledged* problem is essentially an attempt to specify a set of external conditions which might meet this methodological requirement so far as the problem the group is working on is concerned.

The other approach which suggests itself is an attempt to randomize in some fashion the kinds of external conditions involved, and to deal with large aggregates of cases. If there are internal tendencies characteristic of interaction as a systematic process or social system, the similarity of these tendencies from case to case, in spite of the differences due to external conditions, would be expected to exert a constant "biasing" effect away from randomness. In aggregates of cases, then, where the external conditions of individual cases are varied enough to average out, one would expect the effects of the internal-system tendencies to become apparent.

In short, the present reasoning suggests that there are two ways of detecting the presence and nature of rather general internal tendencies, if, indeed, they exist: first, by letting them operate under *full-fledged* rather than *truncated* external conditions, and second, by averaging out various kinds of truncation and accentuation by adding many widely varied cases together.

If later research indicates the general methodological position taken here to be tenable, the problems of experimentally investigating how particular types of external conditions influence the course of interaction are greatly simplified. It may be that empirically average phase tendencies like those presented in Table 26.3 can be taken as sufficiently representative of the effects of parts of the process on other parts, i.e., the social system effects. In experimental designs, then, where a full-fledged problem is used as the basic testing situation, deviations from the empirical norm might be used as evidences of the effects of known or experimentally introduced conditions. For example, the experimental introduction of persistent difficulties of communication or orientation might upset the phase sequence expected on the basis of the internal tendencies of the interaction system alone.

Conversely, in using the method for clinical analysis or training of particular groups, groups might be set up under full-fledged conditions, and the deviations from the empirical norm used as diagnostic indicators of otherwise unknown characteristics of the group or the members. For example, the appearance of a high rate of negative reactions in the first phase of a standard full-fledged problem might indicate the presence of hostilities not arising out of the present interaction itself, but existing as a prior condition.

Summary

A set of categories for the firsthand observation of group process has been presented. A set of conditions has been described which we believe to be characteristic of many staff conferences, committees, and similar groups dealing with problems of analysis and planning with the goal of group decision. We have presented a hypothesis which states that under these specified conditions the process tends to move through time from a relative emphasis upon problems of *orientation,* to problems of *evaluation,* and subsequently to problems of *control;* and that concurrent with these transitions, the relative frequencies of both *negative reactions* and *positive reactions* tend to increase.

It has been shown that all 22 sessions available to the experimenters from prior observations, when considered as an aggregate, show a significant departure from a random distribution of acts between phases. It has been shown further that the observed significance is attributable to the inclusion of cases which meet the specified conditions. Individual cases which do not meet the conditions do not show a significant departure from a random distribution of phase movements.

However, when all of the acts of the 22 cases are summed together by type of act and phase, the values for each type of act have maxima and

minima which correspond exactly with the particular phase movement postulated for individual cases under the specified full-fledged conditions. This finding may be accidental. The suggestion is offered, however, that in addition to the external conditions specified, the interaction process should be considered as a system, with internal tendencies which make each part of the process a condition to other parts. These "internal" conditions are assumed to be similar to some degree from case to case and to exert a constant "biasing" effect. This biasing effect becomes apparent either in individual cases under full-fledged external conditions or in aggregates of cases in which differences in external conditions average out.

It is suggested that if the phase movement described here does represent the effect of conditions internal to the process itself, it may be used with some advantage as a base-line for the detection of discrepancies or accentuations due to known or experimentally introduced external conditions or, conversely, as diagnostic indicators of the presence of otherwise unknown conditions.

Finally, the general method of testing for the existence of any given phase pattern seems to open the way for an experimental attack on problems of determining the effects of various patterns of process under various conditions—effects on the motivation and satisfaction of participants and on their performance of the group task.

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Part Six

THE STRUCTURAL PROPERTIES OF GROUPS

34
The Structural Properties of Groups: Introduction

Suppose that you, as a person interested in group life, have the chance to visit a staff meeting of a department within a large business concern. All of the members of the conference are strangers to you, but you happen to know that one is a vice-president of the company and another is a junior executive just a few years out of college. You decide to see if you can determine, on the basis of the interactions in the conference, which person is the vice-president and which the junior executive. These two, of all the participants, will be the farthest separated on the company's table of organization. Soon you begin to note that two of the participants act in quite different ways. The man whom you believe to be the junior executive addresses the majority of his remarks to the man you believe to be the vice-president. Moreover, he chooses his words with care in order that he not seem to imply any criticism of the other man or appear inadequate. He listens carefully to what the vice-president has to say and is usually ready to see the reasonableness of the arguments made by him. He is friendly toward the boss, ready to tell a joke or talk about his family, and to copy some of the older man's mannerisms.

In contrast, the vice-president talks pretty much to the entire group. He freely offers information, advice, and even criticism to others. He seldom makes critical remarks about himself. Nor is he nearly so ready as the younger man to listen to statements made by the rest of the group. He is more likely to defend his own position than to see the value in the points made by the staff. And on the whole he is less inclined to idle talk than is the junior executive.

You may come away from the meeting feeling that the two men acted the way they did because they had quite different personalities, and you would undoubtedly be correct—in part. If, however, you were to see the junior executive in a meeting with *his* staff in which he is now the boss, you would probably be surprised to see how differently he behaves. Now it is likely that you would find the young man acting toward others in a way very similar to that shown by the vice-president in the earlier meeting. What are the features of the two situations that produce such marked differences of behavior?

To answer this question we must carefully examine what is commonly

called the structure of the group and the *position* each person occupies in the structure.

It appears to be almost impossible to describe what happens in groups without using terms which indicate the "place" of members with respect to one another. Various words have been employed, but the most common are: position, status, rank, office, role, part, clique, and subgroup. Although these do not all convey intuitively quite the same meaning, all do refer to the fact that individual members of a group can be located in relation to other members according to some criterion of placement. The prevalence of such terms in the literature on groups, moreover, suggests that such placement of individuals is important for understanding what happens in and to groups.

Consider the following statements which might be used to communicate something about a person's place in a group: He is central in this group but marginal in that one; he is part of the ruling clique; from where he stands he can learn about anything going on in the organization; you can't reach the president except through one of the vice-presidents; since he moved from line to staff no one even notices him at the departmental meetings; everything he does is with an eye toward promotion; his chances of getting an ulcer have increased 50% since becoming an executive. The various terms employed in such descriptive sentences refer to phenomena which cannot be conceived satisfactorily as "properties of an individual" nor as "properties of an undifferentiated group." They refer to distinguishable parts of a group, whose nature and arrangement constitute "internal properties" of the group.[1] These properties along with other determinants, influence the behavior of individuals and the performance of groups; people behave as they do partly because of their particular locations within a differentiated group, and groups perform as they do partly because of the particular type of internal structure they possess.

These rather abstract considerations may be made more concrete by considering the communication structure of a group. When organizations are large, their formal structure usually does not provide for direct communication from each office to every other. In a military organization, for example, one cannot communicate with the commanding officer without first talking to one's immediate superior. In governmental agencies it is

[1] This designation of three kinds of "properties" is similar to the three "panels of group description" proposed by Cattell (8). His first panel is made up of *population variables,* which are "means (or other statistical parameters) of the measured characteristics of the component individuals." The second panel is composed of *structure variables,* which are "descriptions of the internal behavior of the group" and consist of "statements of relations among (the behavior of) group members." The third panel contains *syntality variables,* which represent the "performances of the group acting as a whole."

quite common for direct communication with a person in another bureau to be forbidden. One must "go through channels," which means that a communication must go "upstairs" in the agency, across to the top level in the other, and then down to the person addressed. The totality of such channels constitutes one aspect of the group's communication structure.

Once we have determined the communication structure of a group, we may locate every member in it. The locations may then be characterized in various ways. One person, for example, may be in a central position (connected to everyone else through a relatively small number of communication links) and he will be quite likely to hear about nearly everything. Another may be in a peripheral position (removed by many links from several other members) and he will tend to be out of touch with things. A third may be located in the only position connecting two parts of the group and he is a potential "bottleneck" in the flow of information between the two subgroups. It should be evident that a person's location in a communication structure will affect him in important ways.

When a group acquires some stability in the arrangement of relationships among members, it may be said to be structured.

Origins of Structure

Much has been written about the reasons that groups become structured, and we shall not attempt to summarize this literature. It will be useful, however, to note that three rather different kinds of factors tend to produce stable differentiations within groups. The first set stems from requirements for efficient group performance, the second arises from the different abilities and motivations of different individuals, and the third derives from physical and social characteristics of the group's environment.

Efficient group performance. As a group organizes to do work, it often finds that it is more effective if it "specializes" the tasks of its members. Thus, one subgroup of a fraternity becomes responsible for maintenance of the house, another arranges social activities, another maintains liaison with the interfraternity council, another supervises the pledges, and so on. In large, formal organizations this specialization is quite self-consciously supervised by a specialist in specialization. It is the objective of this person to construct a structure which will result in optimal organizational performance. Usually he is primarily concerned to see that each position (*a*) consists of a set of functions which can readily be performed by one individual (or sometimes a group), (*b*) has unambiguous responsibility to some other position, (*c*) has clear authority over other positions, and (*d*) is directly connected in a communication network with some positions but not with others. Whether or not a group recognizes

explicitly any relation between the way it is structured and its effectiveness, most groups find it advantageous to develop some specialization, some regularity of assignments and responsibilities, and some dependability in its internal communication and coordination.

Abilities and motivations of individuals. Many writers have looked for the origin of group structure in the characteristics of the individuals composing the group. Barnard (3), for example, stresses heavily the way in which individual differences in ability and temperament lead people to prefer to do certain group tasks themselves and to give other tasks to other people. Similarly, some people like to assume responsibility while others prefer to be told what to do. Some gain satisfaction from fame and exhibitionism while others are shy and retiring. It has been observed frequently in informal discussion groups that one person "naturally" tends regularly to be perhaps the compromiser, the scapegoat, or the joker. From observations of this sort and everyday experience in groups, it is clear that individual abilities and predispositions do result in regularities of interaction and differentiations among the parts of a group.

Another facet of individual motivation has also been proposed as a source of group structure. It has been suggested by Bales (2) and others that an individual's security derives largely from his being able to count upon a stable social environment. All members of a group, whether their purposes are exploitative or cooperative, share a common need for being able to predict how other members will behave toward them. Out of this need for predictability come strong pressures on each member to assume certain stable relations with all other members. In a similar vein, Wispé and Lloyd (45) have proposed that subordinates may desire formally structured relations between themselves and superiors so as to protect themselves from any impulsive or "personal" application of negative sanctions for failure to perform well. To account for findings resulting from their analysis of interviews with the sales personnel of a life insurance company, they advance the hypothesis (45, 60) that "behind the desire for structure lies a permeating anxiety which results from the intense competition through which the agents must live and their inability to meet it efficaciously. The desire for structured personal interaction is thus a defense mechanism which attempts to control the behavior of those individuals in the system who have the authority to initiate negative sanctions."

The distribution among group members of needed resources or of the control over resources may be expected to influence the pattern of relations that develops among them. If, for example, one person has sole possession of expert knowledge needed by the others, a centralized structure may tend to arise in which each member depends on the central person, communicates primarily with him, and identifies with him. Quite a

different structure may be expected if valuable information is shared by two people or if two types of resources (e.g., expertness and emotional warmth) are possessed by different people. This latter situation is essentially the one cited in our discussion (Chap. 25) of "task leader" and "social-emotional leader." We are suggesting here that the structure of the whole group (i.e., the pattern of relations among group members) may be affected by the degree of concentration and the nature of distribution of resources in the group.

The environment of the group. It is a common observation of the leaders of children's groups that the physical environment of the group, including such things as the amount of space available for play or the type of recreational equipment, greatly influences the structure of the group. Several studies have indicated, too, that the opportunity for social contact provided by the geographical arrangement of houses affects the way friendships develop and consequently the sociometric structure of a neighborhood (14). The sociometric structure, in turn, has been shown to influence the kind of communication network that arises—people are less restrained in talking to close friends than to mere acquaintances (13). In discussion groups the physical limitations imposed by the fact that only a few people can be heard at once makes the absolute size of the group an important determinant of group structure. Finally, making available to a group certain technological facilities, such as telephones for communication or equipment for simultaneous interpretation at international conferences, may modify its structure in a fundamental way.

The social environment of a group also exerts an influence on the structure of a group. Thus, for example, the stratification of society into social-economic classes or racial groups may be reflected in the sociometric structure of a neighborhood (15). Similar influences, of course, may be seen in groups at school, church, and throughout the community.

Formal and Informal Structures

Research and everyday experience in organizations have made it quite clear that the stable structures of groups may differ greatly in how formally they are specified. In highly formalized groups there may be detailed written statements concerning the structure. The bylaws of an organization may specify all the positions within it together with the duties of each as well as the types of relationships expected among them. Some organizations have written regulations governing who can communicate with whom. A few organizations even go so far as to ban social interactions among certain positions. To the extent that these formal, written statements of structure are taken seriously, they are known by members and enforced by organizational sanction.

In contrast to these groups with highly formalized structures, there are others which display stable structures without there ever having been any explicit description of them or any formal agreement concerning them. In Chapter 39, for example, Lippitt, Polansky, Redl, and Rosen show how boys in summer camp are in common agreement concerning which boy has the greatest power in the group, although they probably have never discussed this fact among themselves. Similarly, Mills (Chap. 40) describes how, in three-person discussion groups, different stable patterns of interaction develop without any explicit agreement. And Hare (24) has shown how the size of the discussion group influences such things as tendencies to split into factions and the amount of power exerted by the leader, even though the group's adjustment to its size is seldom explicitly discussed. From all available evidence, there is yet no reason to conclude that informal structures are any less demanding upon group members than formal ones.

In many cases a formal organization may have within it, or parallel to it, an informal organization which is quite different. Thus, the members of a group may be expected to do certain things, or relate to others in certain ways, according to the *formal* organization, but may also feel quite different influences stemming from the *informal* organization. Roethlisberger and Dickson (35) provide dramatic illustrations of the conflicts created for a worker when he must decide between conforming to the pressures coming from the formal organization and those deriving from the informal one. To the degree that the worker's behavior is mainly influenced by the informal social structure, it may appear quite unexplainable to the management, who expect strict conformity to the formal structure.

Burns (6) has presented a sensitive and insightful description of the relations between informal groups of management personnel and the formal organization of a factory. He discovered in this factory certain informal groupings which consisted of "intimates who—in the canteen, in the corridors after lunch, and after the factory stopped at night—constantly gravitated together into collusive-looking conversations." The principal activity of these groups was to gossip, and participation in them was considered to be not quite legitimate. From a careful analysis of their composition and topics of conversation, Burns identified two types which he labeled "clique" and "cabal."

Cliques were composed of older men who had come to believe that the odds against further advancement in the firm were great. For these men the clique appeared to serve as a system of mutual defense, providing social support around new standards of reference by which the organization's norms of success could be discounted. Thus, "features of the organization—the bonus system, rate fixing, progress meetings, the formal

communication system—were mentioned depreciatingly as 'the way the firm does things.' " And, leadership was often taken by a comic who could make fun of the firm's procedures, or by the man who had most clearly rejected his occupational role and who was thereby most free to criticize the firm and successful people in it. Burns concludes (6, 476), "the clique thus appears as a form of counter-system, a characteristic element in our society in which patterns of behavior appropriate to dominant positions find their response in countervailing patterns of conduct developed among the less privileged or less powerful positions."

Cabals, in sharp contrast, were made up of younger men who were actively striving, and hopeful, for advancement. They accepted the system and the values of the organization. The function of membership in a cabal was therefore not to redress occupational failure, nor to gain reassurance, but to promote further occupational success. The cabals were especially concerned with power, status, and access to secret information. Cabals tried to capture powerful people in the organization by supplying them with information concerning new developments in the factory. And, by having powerful people in the cabal, members could gain further access to "secret" information which would give them an advantage over people not in the cabal. Membership in a cabal was particularly valuable to people hoping to move upward by providing intimate relationships with others of higher or more secure status in the organization. In short, cabals attempted to restructure situations and values in the organization so as to advance the interests of their members.

In our present stage of knowledge, it is not possible to assert confidently what factors determine whether a given individual will participate in a particular informal group or what the relative influence on him of formal and informal structures will be. It will be recalled, however, that in Chapter 9 we presented evidence indicating that a group will be more able to influence its members the more the members are attracted to it (i.e., perceive it as a source of satisfaction for important needs). We should expect, then, greater pressures to conform to that structure which provides greater need satisfaction, and we ought to find that informal structures emerge more frequently in those organizations whose formal structures do not provide adequate opportunity for satisfying the needs of members. Burns' analysis of cliques and cabals adds support to this interpretation.

Problem of Characterizing Structures

If we are to compare the structure of one group with that of another, or if we are to study how the structure of the same group changes over time, we must develop some way of describing the characteristics of any

given structure, whether it be formal or informal. Although much has been written about the structure of groups and a good deal of research has been completed, a fully satisfactory theoretical conception of group structure has not yet gained general acceptance. Three rather different, though not entirely incompatible, approaches to conceptualizing group structure may be distinguished.

Office, position, status, and subgroup. Much of the thinking found in the literature on group structure accepts the general approach outlined by Linton (30). One of his central points is that both structural (spatial) and dynamic properties are interwoven in the phenomena of group differentiation. Linton proposes to keep these aspects separate by treating them under two terms: status and role. Thus he writes (30, 113–114):

> A status, as distinct from the individual who may occupy it, is simply a collection of rights and duties. . . . A role represents the dynamic aspects of a status. The individual is socially assigned to a status and occupies it with relation to other statuses. When he puts the rights and duties which constitute the status into effect, he is performing a role.

Various revisions and refinements of this approach can be found in current theoretical writings. Perhaps the most important of these is that of Newcomb (33) who has developed Linton's general point of view and incorporated it into a broad theory of social psychology. He employs the concept of position (rather than status) and views position as the "smallest element—the construction block" of societies and organized groups. He views role as the behavior of people "as occupants of the position." Newcomb notes further that "every position which is recognized by the members of a group contributes in some way to the purposes of the group; this contribution represents its *function*" (33, 277). The similarities should be apparent between this approach and our treatment of "offices" in Chapter 25.

There is general agreement among those who adopt this approach that, whenever a group continues to exist for some time with group activities to perform, there arises a tendency for divisions of responsibility to come about. Different parts of the group are made regularly responsible for different group activities and functions. These parts may be given various labels—status, position, office. Whatever the label, however, they are conceived as having two properties: (*a*) each member of the group may be located as "inside" or "outside" each part, and (*b*) expected, permitted, and prohibited behaviors are associated with the occupancy of each part.

The structure of a group consists, however, not only of differentiated parts but also of relations, sometimes called "links" or "bonds," between parts. Four *types of relations* among the parts of a group have received

most attention, especially from theorists concerned with workgroups and organizations: (*a*) the flow of information, (*b*) the flow of work, (*c*) authority, and (*d*) the mobility of people. It may be found with respect to each of these for any specific pair of parts that the relation between them is symmetrical, asymmetrical, or absent. Thus, for example, information may flow freely in both directions between two offices, in one direction only, or not at all. Or, the personnel practices of the group may permit people to move from either position to the other, only from one to the other, or not directly from either to the other. It should be clear that these different types of relations may, in principle, be quite independent of one another. To illustrate, the positions of president and secretary may be related symmetrically with respect to the flow of information; information reaching either the president or his secretary is likely to be passed on to the other. The same two positions may be asymmetrically related with respect to the flow of work and authority; both work and commands can go only from the president to the secretary. And the positions may be unrelated with respect to mobility; it is not possible for a person to move from being secretary to being president, or vice versa. In actual practice, of course, we should expect to find a tendency for relations of certain types to be associated; the flow of work and the distribution of authority, for example, might be expected to "require" certain communication channels. The discovery of what types of relations tend to go together under various conditions of group life is an interesting topic for research.

In order to describe the structure of a group, it is necessary to determine the nature of each of these types of relation (and perhaps others) between all pairs of parts of the group. Each type of relation may be thought of as generating a corresponding *type of structure*. From an examination of the *pattern* of authority relations, for instance, one might characterize the authority structure of the group as hierarchical, equalitarian, or anarchical. Or, one might describe the communication structure in terms of its completeness, degree of connectedness, or its provision for "feedback loops." Unfortunately, no comprehensive system for characterizing the many patterns of relations that may constitute group structure has yet gained general acceptance although, as we shall see later, certain mathematical treatments of structure appear to hold great promise.

Interpersonal relations. A somewhat different approach to the study of group structure concentrates, not upon the relations between positions or offices, but directly upon the relations between individuals. The procedure followed is, however, essentially the same as the previous one if we consider individual members as the "parts" of the group: the relations between each pair of members are specified, and the (interpersonal)

structure of the group is defined as the pattern of these interpersonal relations. Needless to say, this second approach is better suited than the first to the study of groups which do not have clearly identifiable offices, but it may also be used even when they do. When a group does have specified offices and definite relations among them this structure may be thought of as one of the determinants of the interpersonal structure of the group, since relations between offices may be expected to influence relations between individuals who occupy these offices. It should be noted, though, that at least under certain conditions the structure of offices may be properly conceived as a resultant of stabilized interpersonal relations. And, the possibility should not be overlooked that the two kinds of structure are always interdependent to some degree.

To date; the research conducted on interpersonal structures of groups has investigated primarily four types of relations. (*a*) The relation *A chooses B* (sociometric choice) was one of the earliest to be used in describing the interpersonal structure of groups. Moreno (31) employed a criterion of choice intended to reveal the desire of the chooser to associate with the person chosen in some particular activity. In subsequent research many different criteria of choice have been employed, and it is now clear that many different aspects of interpersonal relationships may be revealed by the technique of having people "choose" one another. The general relation, A chooses B, must therefore be viewed as including more specific ones whose particular nature depends upon the criterion of choice employed. (*b*) The relation *can communicate to* has been studied intensively, especially in experiments where individuals are assigned to groups having some degree of restriction on who can communicate to whom. The nature of the interpersonal communication network of a group has been found to have marked effects on many other aspects of the group. (*c*) The interpersonal relation *has power over* has also been investigated in a variety of settings. The interpersonal power structure of a group is undoubtedly one of its most important features. It is becoming clear, however, that a person may be said to have, or not to have, power over another depending upon what criterion of influence is employed—he may be able to influence a particular person with respect to some things but not others. It follows, then, that the exact nature of the interpersonal power structure of a group will depend upon the "topic" of influence being considered. (*d*) Finally, a few experiments have varied the flow of work among group members and thus the pattern of *task interdependence* among individuals in the group.

One of the difficulties in characterizing group structure in terms of interpersonal relations lies in the fact that there are so many possible types of relations between people. The four listed here constitute but a small proportion of the total which might be studied. DeSoto and Kuethe

(10) have developed an ingenious method for systematizing "the myriad interpersonal relationships that are named in English." They present data on some of the properties people attribute to ten relationships: likes, trusts, feels superior to, is happier than, confides in, dominates, lies to, dislikes, is afraid of, and hates. Work like this is beginning to lay the groundwork for solving the problem of how to establish a satisfactory basis for determining which of the many possible relationships can meaningfully be employed to specify group structures. No satisfactory solution, however, has yet been achieved.

Ranking. A rather different way of describing the structure of groups is commonly employed. This method consists in essence of designating some dimension, or attribute, in terms of which people can be *ranked* and defining a person's "status" or "standing" in the group as his rank on one or more of these dimensions. The nature of this conception and its relation to the previous two may be seen in the following statement by Homans (27, 179) concerning the concept *status:*

> When a sociologist says that a man has high status in an organization, he may mean any or all of the following: (*a*) the man is close to the center of the web of communication in the organization; (*b*) he is carrying on a particular kind of activity or maintaining a certain level of activity; and (*c*) by reason of his position in the web of communication and the kind of job he does, he is highly ranked or valued. Thus in a certain manufacturing firm, the General Manager reports to the President, is in charge of manufacturing, and has high prestige. We do not want to lump all three aspects of his position together under the name of *status,* but to separate them and see the relations among them. And of the three aspects, we give the name of *rank* to the evaluation or prestige aspect. . . .

The essential feature of this third approach to defining structure, in contrast to the other two, is that it is based on the ranking of group members with respect to some characteristic they possess. In its most general form it would permit the assignment of a rank to members with respect to any characteristic which has the logical properties required for constructing an ordering of people. Thus, a member might be said to have a certain rank with respect to age, intelligence, height, wealth, duration of membership, popularity, frequency of attendance at meetings, and so on endlessly.

In actual practice very few orderings have been considered by theorists to constitute group structure. But, just as we found in considering interpersonal relations as a basis for defining structure, no satisfactory general principle has yet been formulated for selecting among the many possibilities. Bales (2) has proposed that four kinds of differentiation are most common in small groups: (*a*) the degree to which members have access to resources, (*b*) the degree to which they have control over other per-

sons, (*c*) the degree to which they have importance or prestige, and (*d*) the degree of solidarity or identification each has with the group. The third of these, the one labeled *rank* by Homans, has been employed most widely in research on groups. From this research it has been consistently reported that a person's rank in an ordering of people according to prestige makes a great deal of difference to his behavior, his interactions with others, his level of aspiration, and his self-evaluation. Caution is required, however, in interpreting results like these because it is almost certain that various orderings of people are positively associated. We should expect, for instance, that a person who is high on one of the four kinds of differentiation identified by Bales will tend to be high on the others. Unfortunately, most of the research on the effects of prestige has not eliminated the possibility that other bases of differentiation also contribute to observed effects.

Mathematical treatments of group structure. In recent years a great deal of attention has been devoted to the possibility of using mathematics in the treatment of group structure. We shall undertake here only a brief description of some of the general approaches which have been made and provide references to the more technical literature. The most promising developments, to date, have employed the second conception mentioned above, which defines group structure in terms of interpersonal relations. The major part of this work has been motivated by an interest in sociometric choices (interpersonal liking), communication networks, or power structures. In all of these, group structure is conceived as a pattern of dyadic relations. The mathematical formulations are, of course, entirely abstract and could be applied to any kind of interpersonal relation.

Much of the early work on group structure made use of the sociometric test, in which each member of the group indicates his preferences for associating with other members of the group. Originally these choices were converted into a picture, or sociogram, in which circles represented people and arrows represented choices. The sociometric structure of a given group could be examined by inspecting this picture. The first major step in the mathematical treatment of sociometric material, as pointed out by Glanzer and Glaser (17) in their review of mathematical representations of group structure, was the observation by Forsyth and Katz (16) that sociometric choices could be cast in the form of matrices and thereby subjected to the operations of matrix algebra.

In its simplest form a matrix is constructed so that each member of the group is represented both as a row and a column of the matrix. If person A chooses person B, the number, 1, is entered in the cell where row A and column B intersect. If person A does not choose person B, the number, 0, is entered in this cell. (It should be noted that more complex data can also be put in matrix form, but we shall not go into these details here.)

Once the choices of a group have been converted to a matrix, the operations of matrix algebra can be performed, and various properties of the sociometric structure of the group can be specified rigorously. For example, Festinger (12) and Harary and Ross (23) have developed methods for detecting "cliques" by matrix operations, and Ross and Harary (36) have demonstrated how to identify the "liaison persons" in a group by means of matrices. Glanzer and Glaser (17) have summarized the many indices which can be constructed from such matrices. These provide a basis for comparing groups with one another and individuals within groups.

It is apparent from this and similar work that matrix algebra can be a useful tool in research on group structure. Since matrices can be dealt with by high speed computers, it is possible in this way to handle large quantities of complex material rather easily. These methods can be used, of course, not only on sociometric data but on any type of interpersonal relation.

Another mathematical treatment of structure was first introduced by Bavelas (4) who wanted to be able to characterize rigorously such structural properties of a group as its segmentation into central and peripheral layers or the distance from its innermost part to the outside. He constructed a formal system by which he could do so and initiated a program of research on the effects produced by placing people in communication networks with different structural properties. Examples of this research may be found in Chapters 35 and 36.

It has subsequently been shown that Bavelas' formal system can be incorporated into the more general mathematical theory of linear graphs (known more briefly as "graph theory"). The basic terms of this mathematical system are *point* and *line*, and the system is concerned with the patterns which can be constructed from these two abstract elements. The usefulness of graph theory for treating structural properties of groups lies in the possibility of coordinating each member of a group to a point of a graph and a relation between a pair of people to a line connecting the corresponding points. A pictorial drawing of a graph looks like a sociogram, since the points of a graph may stand for people and the lines for sociometric relations. The same sort of pictorial drawing would result from coordinating points to people and lines to permissible communication links between people. Several graphical representations of this sort are shown in Chapter 35.

The essential contribution of graph theory, however, derives from the fact that it is a mathematical system consisting of undefined terms ("point" and "line"), axioms, and theorems derived from these. Specifically, three major results from the mathematical work on graphs are of value in the treatment of group structure. First, graph theory contains

certain "higher order" concepts which are rigorously defined in terms of the mathematical system. Since these terms refer to more complex properties of graphs, the coordination of graphs to groups of people yields a set of precisely defined concepts for describing group structures and thereby for comparing different structures. Thus, for example, one can speak with exact meaning about the diameter of a group, the number of levels it has, its degree of connectedness, its vulnerability to splitting, and its degree of balance. The availability of rigorously defined concepts makes it unnecessary to rely upon such ambiguous labels as "hierarchical," "decentralized," or "loosely connected" in characterizing group structures. Second, graph theory supplies techniques of computation and formulas for calculating certain quantitative features of group structure. Third, graph theory contains theorems which specify features of graphs, and thus of group structures, which follow necessarily from the undefined terms and axioms of graph theory. In this connection, however, it should be noted that graph theory, per se, has nothing to say about empirical tendencies. In order to derive theorems about the "behavior" of group structures, it is necessary to add to graph theory additional axioms or postulates about the psychological or sociological determinants operating in any given situation. Both the contribution of graph theory and the need for axioms about empirical tendencies are well illustrated in Chapters 37 and 38. The first of these two chapters also provides a brief introduction to the concepts and methods of graph theory. More complete accounts of graph theory and its possible uses in group dynamics are presented by Harary and Norman (22), Harary (20), and Cartwright (7).

It should be apparent from this brief discussion of matrix albegra and graph theory that a given set of empirical data (e.g., sociometric choices or communication links among the members of a group) can be represented both as a matrix and as a graph. To illustrate, if person A chooses person B, this fact may be represented both in a matrix by the number, 1, in the cell where row A and column B intersect and in a graph by a directed line from point A to point B. For this reason, the two mathematical treatments of group structure are not incompatible alternatives for the group dynamics theorist. Instead, they provide different, but supplementary, methods for dealing rigorously with various aspects of structure. Which method is preferable in dealing with a particular problem depends upon the specific nature of the problem.

In introducing this discussion of matrices and graphs we noted that these have been employed primarily in connection with the view of group structure which deals with interpersonal relations. It should now be apparent that they are equally applicable when group structure is viewed

as a pattern of relations among offices. All that is needed is to represent an office as a row and column of a matrix or as a point of a graph. In fact, the familiar organization chart may be conceived as a pictorial representation of a graph of the relations among offices. The conception of group structure in terms of the ranking of people also relates to the other two broad conceptions. Both matrix algebra and graph theory permit the construction of indexes which assign numerical values to each member of a group and, of course, it is then possible to rank people according to these values (which are derived strictly from the structural properties of the relations between people). Harary (21), for example, has defined the status of a person in terms of an index calculated from the graph representing the interpersonal relations in a group. There is, thus, reason to believe that by the aid of mathematics the three approaches to group structure may eventually be consolidated into one. Much more theoretical and empirical work will be required, however, before a fully satisfactory conception of group structure can be achieved.

Some Effects of Structure

Empirical research on the structure of groups has tended to concentrate on a few aspects of the total topic. We shall consider here three general questions which have motivated much of the research conducted to date: (*a*) What consequences for the individual group member stem from his location in the group structure? (*b*) What effects on the performance of a group are produced by its structure? (*c*) How are different *types* of structure interrelated in a particular group?

Consequences of location in the structure of a group. From the point of view of the individual member, his location in the structure of the group is of great importance. For one thing, he will probably not find all locations equally attractive or satisfying. He may want to have many people "beneath" him in the power structure, or he may desire to have a central location in the communication structure. If his location is not the one he prefers, there will be forces on the member to change his location or to change the structure as such. Much of his behavior in the group will then be governed by his desire for mobility or for a modification of the group's structure. If he is satisfied with his location, he may make great efforts to maintain it and resist anything that might bring about a change in the structure of the group. An interesting example of this kind of situation has been provided by Festinger, *et al.* (13) in their description of a small community in which a hostile rumor, started by people who were opposed to an impending change of group structure, served to retard developments leading to such a change. In general, the degree of

satisfaction that a person derives from his location in a structure, and the degree of frustration of his desire to change location, may be expected to influence his morale, productivity, and mental health.

The most intensive and carefully controlled research on the effects of location in a structure has been concerned with *communication networks.* The common procedure, illustrated in Chapters 35 and 36, has been to create in the laboratory groups consisting usually of four or five people, to assign them a group task, and to establish certain patterns of permissible communication among them while they are working on the task. The group task is typically an intellectual problem which requires that information, initially distributed among the members, be collected into one place and processed so as to provide an "answer" to the problem. As a rule, the experiment is conducted so that when an answer is achieved a new problem is given, and the group repeats the process several times.

The independent variable in these experiments is the *pattern of permissible communication links* between the members of the group. Of major interest has been the *degree of centrality or peripherality* of each person in the network. Although several slightly different formal definitions of "centrality" have been employed, the intuitive notion involved is not difficult to grasp. If, for example, five people, A, B, C, D, and E, are placed in a communication network so that the only communication links are A-B, B-C, C-D, and D-E, the network then resembles a chain with C in the most central location and with A and E in the most peripheral ones. If to this network we add the communication link A-E, then the network resembles a circle (known technically in graph theory as a cycle) and all locations become equally central. It is possible to determine the centrality of each person in any specified network. Some of the networks employed are illustrated in Chapter 35.

The experimental studies quite consistently show that the degree of centrality of a person's location in such communication networks is related to the satisfaction he experiences from participating in the group. In general, the greater the centrality (or the degree of centrality relative to that of others), the greater the satisfaction. And, as might be expected, the average satisfaction among the members of a group is related to the average degree of centrality of the positions of the group's network.

Why should personal satisfaction be positively associated with centrality of location? Several hypotheses have been advanced. The first was proposed by Leavitt (29) who reasoned that a person in a central location will be seen by himself and by others as having the greatest potential for getting the information required for arriving at the answer to the group's problem. Perception of each member's "answer-getting potential" will, in turn, affect the roles of members and accordingly the degree of each person's dependence on others or independence from them. Leavitt

then concludes (29, 48): "In our culture, in which needs for autonomy, recognition, and achievement are strong, it is to be expected that positions which limit independence of action (peripheral positions) would be unsatisfying." A rather similar hypothesis has been advanced by Trow (44). He proposes that the relationship between satisfaction and centrality may be accounted for largely by two variables: (*a*) the autonomy of positions in the group and (*b*) the members' need for autonomy. Autonomy here means "independence from others with respect to direction of one's own activities." Trow has demonstrated experimentally that people in positions of higher autonomy are more satisfied and that the relationship between autonomy and satisfaction is stronger among people with a higher need for autonomy.

Mulder (32) has presented a critique of these and other hypotheses designed to account for the relation between centrality and satisfaction. He concludes that the research evidence tends, on the whole, to be consistent with hypotheses broadly similar to those of Leavitt and Trow. However, he argues that independence and autonomy are essentially negative conceptions. What is it, he asks, that people want to be free to do? He suggests three possibilities which might be applicable to the experimental situations employed in this type of research: "freedom to unfold activity," "freedom to exert power," and "freedom to have responsibility for completion of one's own task." On the basis of the results of an experiment he conducted and of others reported in the literature, Mulder concludes that it is the freedom to exert power (i.e., to influence the behavior of others) that produces the relationship between centrality in the communication network and satisfaction. Although Mulder's findings and arguments are impressive, it is hardly likely that the general problem has yet been finally solved. Further research is needed before a fully satisfactory understanding of these phenomena will be achieved.

Another finding from this general line of research is that, when one location is distinctly more central than the rest, there is a strong tendency for the person in this location to become the leader of the group. This finding is, of course, relevant to the question of satisfaction, for a central person, by being a leader, may gain satisfaction of such motives as those for power, independence, autonomy, recognition, and perhaps others. The research reported by Guetzkow in Chapter 36 makes it clear, however, that a more complex differentiation of roles is involved than simply a dichotomy of "leader" and "follower." Guetzkow shows that the nature of the network, the nature of the group task, and certain characteristics of the people in the group all affect the development of the role structure. It is important to recognize, nevertheless, that some communication networks seem to be so restrictive that an individual member's role is almost completely determined by his location in the network.

Although these laboratory experiments have thus far been confined to quite small groups working on one particular sort of group task, their findings point to a significant feature of group life. They suggest that the morale and behavior of members of "natural" groups may be better understood through a knowledge of their communication structures. Satisfactory methods for determining the communication structures of natural groups, however, have to be developed.

The *power structure* of a group provides another important set of influences on the group member. As we have seen in Chapters 9, 16, and 25, the power relations between people determine the ways in which they can affect the opinions and behaviors of one another. A person's location in the group's power structure will greatly influence what he must do, his space of free movement, how autonomous he can be, and whether he is vulnerable to arbitrary control by others. It is clear that the ability of a person to satisfy his needs can be basically affected by his location in a power structure.

Many of the effects of power have been documented by Zander, Cohen, and Stotland (46, 47) in their study of role relations among psychiatrists, clinical psychologists, and psychiatric social workers. They found that in the working relations among these professions psychiatrists are generally agreed to be at the top of the pyramid of power with psychologists and social workers as subordinates. The results of their investigation led them to draw the following conclusions (47, 28):

> We have seen that in general the psychologists and social workers react similarly to the psychiatrists' higher status. They desire more support from the psychiatrists, are more supportive and cautious in their communications to them, place more value on psychiatry than the psychiatrists place on social work and psychology, and find the psychiatrists more threatening than the psychiatrists find them. All of these behaviors are what might be expected when the reactions of a powerful group are compared with those of a dependent group: they are attempts to win the good will of the superiors so that need satisfaction within this professional social structure can be facilitated.

Research on the effects of one's location in a power structure has tended to concentrate on reactions reflected by means of sociometric choices and communication behavior. This research reveals that there is often an "upward orientation" in which subordinates attribute positive characteristics to those above them, seek to associate with them, and direct communication upward. It has also been found, however, that there may be strong tendencies to direct hostility and aggression upward. And, to complete the picture, there is evidence that the existence of a power structure may bring about restraints against communication between levels and heighten the tendency for sociometric choices to be made within the same level. Only beginnings have been made, however,

in the effort to specify the conditions which make one or the other of these types of reaction occur.

Theoretical interpretations of research findings have emphasized two broad aspects of the power situation. One of these concerns the threat which may be engendered by power: if a person's location places him under the power of others, his security may be threatened and he may attempt in various ways to placate the potentially dangerous power figure or to avoid contact with him. The second concerns people's desires to have power, to be located "high" in a power structure. It may be the simultaneous operation of these two tendencies that generate the often reported ambivalence in reactions to power figures.

Reactions of people to the threatening aspects of power may take various forms. One is to "deny" that the threat exists. In experimental studies reported by Hurwitz, Zander, and Hymovitch (Chap. 42) and by Pepitone (34) it was found that people tend to distort their perceptions so as to exaggerate the benevolence of powerful people and thus to make the environment appear safer. Other "ego-defensive" responses to power have also been described in the literature. A rather different kind of reaction is illustrated by an experiment conducted by Stotland (40). This experiment was designed to explore the hypothesis that when people are subordinated to the power of another they experience needs for social support which lead them to seek association in supportive groups of peers. In one experimental condition subordinates were allowed to assemble for very brief meetings away from their supervisors. After these meetings they became more resistant and more aggressive toward the supervisor. Subordinates who, in the other experimental condition, were not permitted to participate in such meetings gave rather favorable evaluations of the supervisor, attributing cooperativeness and reasonableness to him.

The desire for power may also reveal itself in many ways. It appears from research findings like those reported by Thibaut (42), Kelley (Chap. 41), and Cohen (9) that the way the drive for power expresses itself depends to a great extent upon the person's views of his chances for mobility in the power structure. If a person who is in a subordinate location believes that he may move upward, he is likely to engage in behavior that will facilitate this upward locomotion. And if, as is often the case, he believes that those in higher locations can influence his mobility, he is likely to behave so as to create a favorable impression on those above him. His behavior, in other words, will be instrumental to achieving power. Those who have given up hope of improving their location may be expected to behave rather differently. A "substitute locomotion" hypothesis has been advanced by Festinger (Chap. 16), Kelley (Chap. 41), and Back, *et al.* (1), who suggest that when a person who desires to be in a higher location sees his progress blocked, he may make various

efforts to establish "contact" with the higher location by "irrelevant communication" or other forms of non-instrumental behavior.

The classical psychoanalytic view that people will tend to "identify" with power figures has also been employed in explanations of research on the power structure of groups. Ambiguity in the concept of "identification," however, has made rigorous use of it difficult. Lippitt, *et al.* (Chap. 39) show that children with high power tend to be contagious (to have their behavior imitated) even when they appear to make no attempt to influence other children. These authors suggest several different ways in which this process may operate (p. 763):

> We hypothesize that such imitative behavior frequently has the function of being an attempt at locomotion toward the goal of greater social power, in the following ways: (*a*) The behavior of a member in a high power position is sometimes perceived as representing group standards, and so his acts are spontaneously imitated as group approved or group desired acts. (*b*) The high power person is perceived (probably unconsciously) as having the kind of position in the group "I would like to have." Therefore, his actions may be perceived as "the kind of actions which help one to achieve a position like that," so his behavior is picked up by others who would like to be "looked up to as he is." (*c*) From clinical observations we have the hypothesis that in some incidents of contagion a third process may be operating. This is a form of magical thinking in which "acting like him" has the meaning that "I become him" and, therefore, "I am in the same position of influence as he when I act the way he does."

Mulder (32) has recently proposed a formulation of the identification hypothesis which is designed to account for both "positive" and "negative" identification and for the behavior of both more powerful and less powerful people. He states (32, 195): "Our hypothesis is that in more powerful persons and in less powerful persons there exists a tendency toward unification (identification) with the powerful and a tendency toward separation from the less-powerful." He conceives of this process as a manifestation of the desire for power and proposes that it will not be operative when the "distance" between the more powerful and the less powerful is too great. Mulder presents experimental findings which are consistent with this conception.

A final effect of one's location in a power structure may be mentioned. Harvey (25) and Sherif, White, and Harvey (39) have presented evidence that the expectations held by a group for the performance of a member are affected by the member's location in the power (and prestige) structure of the group. These expectations, in turn, appear to affect the member's level of aspiration and his evaluation of his own performance. Harvey's experimental findings show significant variations in estimates of future performance by one's self and by other members, in keeping with their respective status positions in the group. Sherif, White, and Harvey present further evidence to indicate that judgments of the actual

performance of group members are also closely related to the status of the performer (when there are unclear bases for judgment of the quality of performance).

Studies like those summarized here have advanced our understanding of some of the ways in which differences in power affect the behavior of members of a group. Two features of most of this research, however, should be noted. (*a*) Many of the investigations discussed here have not distinquished sharply between power and status. Although these two undoubtedly tend to be associated, we cannot be sure in all studies whether reported effects on behavior are due to the person's location in a power structure or to his rank on some dimension such as prestige or importance. (*b*) The usual approach has been to compare those "high" with those "low" in amount of power; few studies have yet examined different power *structures* in a way analogous to the experiments on communication networks. Research more strictly on the structural aspects of power systems now seems both promising and feasible.

Effects of structure on group performance. The many determinants of the performance of groups have been discussed in Chapter 25, and we shall not consider them again here. Instead, we shall report briefly some of the research on how communication structures and power structures affect the performance of groups.

The experimental studies on communication networks have consistently shown that group performance—whether measured in terms of time required to reach a solution, number of messages sent, number of errors made, or rate of group learning—is affected by the communication structure imposed on the group. The formulation of general principles to account for these effects, however, has been found to be quite difficult. The findings of Guetzkow and Simon (18) suggest one important lead for further research. These investigators employed a technique similar to that used by Bavelas but, in addition, they directed their attention to the ways in which the groups organized themselves to perform the task. They found that the different networks did not create differences in time needed to solve the problem when comparisons were made only among groups which achieved an optimal work organization. The communication structure appears, therefore, to affect performance by the relative difficulty it creates for the group in establishing an effective work organization. Since the nature of the group task will undoubtedly affect the kind of working arrangements ("operational patterns," as Bavelas calls them) required for efficient performance, we may expect also to find, as reported by Heise and Miller (26), that the relative efficiency of a communication network depends upon the kind of problem the group is trying to solve. Further research is now needed to examine in greater detail how groups adjust their working arrangements to meet the require-

ments of group tasks in the different communication networks. The analysis presented by Guetzkow in Chapter 36 indicates some of the ways in which this research might proceed.

A group's power structure may be expected also to affect its performance. Unfortunately, however, little research has been directed specifically to this problem. Some suggestive findings have been reported by Torrance (43) from an experiment on bomber crews consisting of a pilot, navigator, and gunner. He found that members of these crews influenced the crew's decisions in strict accordance with their rank and power. As a consequence, when the correct answer to a problem was held by a person with little power, the crew was less likely to reach a correct group answer than when a powerful person had the correct answer. And Torrance was able to show that when the power structure of the crew was weaker, the likelihood of achieving a correct group answer was greater. In general, one would expect differences in power to be detrimental to group performance whenever those with more power attempt to exert "incorrect" influences and facilitative to group performance when they make "correct" influence attempts. And when a power structure inhibits the participation of those with little power, their potential contributions are not likely to be realized by the group.

Somewhat similar effects of power structures have been reported by Ziller (48), who conducted an experiment in which aircraft crews were required to arrive at a single group estimate of the number of dots on a card. Under the conditions of this experiment it was found that the group estimate was more accurate when the range of alternative answers considered by the group was wide, rather than narrow. Of special interest here are the findings which suggest that the power structure of the crew influenced the range of alternatives considered: When a canvass of individual judgments was made in such a manner that the more powerful members expressed their estimates first, the range of estimates tended to be narrower and the group estimate less accurate than when the canvass proceeded from the bottom of the power structure up.

The theoretical analysis presented by French in Chapter 38 shows in some detail how group performance may be affected by the pattern of power relations in a group. He demonstrates that certain configurations of power relations tend to bring about common agreement in a group while others do not. His analysis indicates further how the power structure determines the influence of each members' initial opinion on the subsequent distribution of opinions in the group. A promising line of investigation is one in which groups perform standard tasks while operating with the different power structures analyzed by French.

Relations between types of structure. In the literature on group structure discussed in this chapter many different "types" of structure have

been identified. Any given group, it seems, may be structured according to the flow of communication, the flow of work, the mobility of people, authority and power relations, sociometric relations, and ranking on such dimensions as importance, prestige, popularity, identification with the group, and ownership of resources. Although empirical research has only begun to examine the nature and consequences of these many different kinds of structure, there is evidence that most of those listed here do in fact exert an influence on the behavior of group members and the performance of groups. In studying group structure we seem almost embarrassed by an abundance of riches; the number of "types" of structure is too great. Is it possible ever to speak of "the structure" of a group or even of a few dominant structures? An affirmative answer to this question would require that there be interrelations among the many types so that they are regularly associated with one another in some definite way.

Discussions of status have suggested that there may be a tendency in groups to "equilibrate" the rankings of members on different dimensions. Benoit-Smullyan (5, 160) has proposed, for instance, that there is a tendency "for a man's position in the economic hierarchy to match his position in the hierarchy of prestige." Lasswell and Kaplan (28, 56) have advanced essentially the same hypothesis in their proposition that "the positions of a person or group in different value patterns tend to approximate one another" so that "the rich tend also to be the healthy, respected, informed, and so on, and the poor to be the sickly, despised, ignorant." Case studies of groups have provided a wealth of anecdotal evidence supportive of this general point of view.

A more controlled study of the nature of status equilibration has been undertaken by Exline and Ziller (11) who experimentally created in groups different combinations of status. They accomplished this by means of instructions designed to create the perception that a subject was either congruent or incongruent in status on (*a*) ability to carry out the task successfully and (*b*) voting power. Their results show in several different ways that interpersonal conflict was significantly greater in those groups having status incongruence. It appears, moreover, that the status structure of these groups was unstable and that, if allowed to change, they might modify their structures so as to bring about congruence. Finally, there is evidence that status-congruent groups had a better quality of group performance.

It seems not unreasonable to assume from the available evidence that future research will be able to show that groups do in fact develop a "core" system for ranking individual members and that discrepancies from this system generate tendencies to bring about a more congruent status system.

Conceptions of group structure which are based on interpersonal rela-

tions (rather than ranking) tend to assume interdependence among the different "types" of relations. French (Chap. 38) assumes, for example, a definite relation between the sociometric structure and the power structure of a group. And we saw in our discussion of research on communication networks that there appear to be optimal matchings between communication relations and both power and work relations.

We may conclude, then, that as our knowledge about group structure increases we shall be able to discover means for identifying the more basic (or genotypic) types of group structure.

Overview of Research Reported in This Section

The following eight chapters examine, in a variety of settings and with several different techniques of research, some of the major phenomena related to group structure.

The first two chapters report research concerned with the communication structure of groups. In Chapter 35 Bavelas describes the original experiments on communication networks whose methods and findings have stimulated so much subsequent research. In these experiments groups were required to perform while operating with certain communication structures. It was found that speed and accuracy in problem solving, morale, and the emergence of a leader were all affected by the nature of the communication network. For information about the findings from subsequent research, reference may be made to the publications of Shaw (37) and Shaw and Rothschild (38).

One interesting extension of this type of investigation is reported in Chapter 36 by Guetzkow. Attention is directed here to the question of how the different communication networks influence the differentiation of roles within the group and the interlocking of roles into a work structure. Guetzkow shows how the communication network combines with other variables to influence the way work is carried out by the group.

The problem of characterizing patterns of interpersonal attraction is considered by Cartwright and Harary in Chapter 37. These authors show how the mathematical theory of linear graphs can be employed to define a "balanced" structure. It is proposed that this use of mathematics clarifies certain ambiguities found in less formalized treatments of structure.

The remaining chapters all deal with some aspect of the power structure of groups. In Chapter 38 French presents a formal theory, also employing the mathematical theory of linear graphs, concerning the ways in which the power structure of a group determines the influence processes within the group and the outcome of these processes. This theory is especially interesting in the way it extends the analysis presented by

Festinger in Chapter 16 to suggest ways in which certain aspects of group structure may affect the content and strength of group standards. The reader who wishes to explore this theory further will want to refer to an extension and technical elaboration of it provided by Harary (19).

A study of the interpersonal relations and interactions among adolescents in summer camps is reported by Lippitt, Polansky, Redl, and Rosen in Chapter 39. This study shows that those children who have the most power to influence others when they want to do so are also more likely to have their behavior imitated by others even when they make no overt attempt to bring this about. It also describes the different ways in which those with more and those with less power behave in the interactions with others. Finally, the study reveals several of the characteristics which appear to give power to the more influential children.

In Chapter 40, Mills attempts to identify a few of the conditions which lead to the development of a stable structure in very small groups. From analyzing the interactions among members of three-person groups, he concludes that when the strong members of a trio form a mutually supportive pair, the third person is firmly excluded, and a stable social structure develops. If, however, the two stronger members are in conflict with each other, no stable structure occurs, and the third member is not excluded. Mills also describes some of the ways in which interaction varies depending upon the members' social positions on various dimensions. An interesting extension of this research has been reported by Strodtbeck (41).

Kelley reports in Chapter 41 an experiment in which two different levels of prestige and power were created in laboratory groups. In half of the groups, both low and high status groups, the subjects were informed that their status was firm and that they would not be moved out of it (nonmobile groups). The remaining half of the groups were told that they might be shifted from their present status to that of the other (mobile groups). Kelley concludes that the more unpleasant a position is for a person (i.e., when a person is in a high status position but may be moved downward or when he is in a low status position without the possibility of upward locomotion), the more likely will he be to talk about things that are irrelevant to the task at hand. He also cites evidence in support of the view that communication in a hierarchy may serve as a sort of substitution for actual locomotion to the higher status position. Finally, he shows how the communications of both high and low status people are shaped so as not to endanger the maintaining (or achieving) of a high status position.

The effects of power on interaction within a group are demonstrated further in a study by Hurwitz, Zander, and Hymovitch, reported in Chapter 42. The findings of this investigation reveal some of the consequences

stemming from the insecurity experienced by people in positions of relatively little power. Thus, it is found that those with more power feel freer to participate in a conference attended by people with different degrees of power. When those with little power do participate, they direct their communications more to those with greater power. Moreover, those with little power tend to perceive that they are liked by those with greater power more than the situation justifies. Thus, it appears that the relatively less secure people (those with less power) attempt to reduce the threat inherent in the situation both through their behavior and through distorting their perceptions of the more powerful people.

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35
Communication Patterns in Task-oriented Groups

Alex Bavelas

When the nature of a task is such that it must be performed by a group rather than by a single individual, the problem of working relationships arises. One of the more important of these relationships is that of communication. Quite aside from a consideration of the effects of communication on what is generally called "morale," it is easily demonstrated that for entire classes of tasks any hope of success depends upon an effective flow of information. But on what principles may a pattern of communication be determined which will in fact be a fit one for effective human effort? Administrative thinking on this point commonly rests on the assumption that optimum patterns of communications for a task-group may be derived from the specifications of the task to be performed. Students of organization, however, have pointed out repeatedly that working groups—even if one considers only communications relevant to the work being done—invariably tend to depart from formal statements of the patterns to be employed. One may take the view that this departure is due to the tendency of groups to adjust toward that class of communication patterns which will permit the earliest and most satisfying flow of ideas, information, and decisions. In groups which are free of outside control, it is clear that the interaction patterns which emerge and stabilize are products of the social process within the group. A group which exists as a part of a larger organization, however, seldom has the freedom to make such an adjustment. In most organizations the maintenance of the stated—and presumably optimum—patterns of communication is regarded as a first principle of effective performance. It is easy to understand this tendency of administration to inhibit changes in formal communication patterns. One need only remember how intimate the relation is between communication, control, and authority.

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In these organizational situations, the imposed patterns of communication may determine certain aspects of the group process. This raises the question of how a fixed communication pattern may affect the work and life of a group. Do certain patterns have structural properties which may limit group performance? May it be that among several communication patterns—*all logically adequate for the successful completion of a specified task*—one will result in significantly better performance than another? What effects might pattern, as such, have upon the emergence of leadership, the development of organization, and the degree of resistance to group disruption?

These questions have prompted a series of exploratory studies which have grown into a program of research. The findings are incomplete at present, but are of interest in their possible implications. In this chapter, the attempt will be made to describe the areas of present experimental activity and the general direction which the work is taking.

Some Geometric Properties of Communication Patterns

If we consider who may communicate with whom in a task-group, without regard for the nature or medium of the communication, we can ask a number of simple but important questions. Let us vary the ways in which five individuals are linked[1] to one another (it being understood that

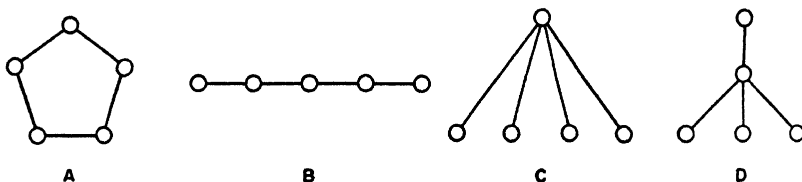


FIG. 33.1. Some different communication patterns. Each line represents a communication linkage.

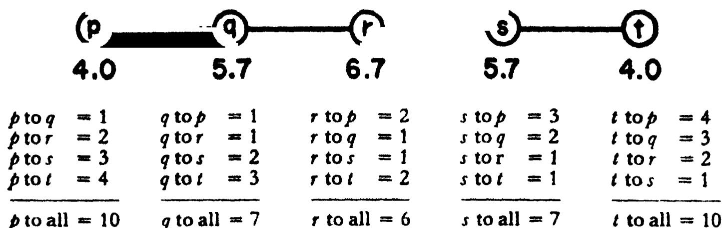
every individual in the group will be linked to at least one other individual in the same group). What different kinds of communication patterns may we produce, and how may we describe quantitatively the difference between them? Obviously, this would more properly be an exercise for a topologist. For the social scientist it is more to the point to ask, "What differences among these patterns appear (quite intuitively) to be of a kind that would affect human beings in some way?" If we look at the patterns shown in Figure 33.1, we find that intuitive notions come easily—perhaps,

[1] For purposes of this discussion, if individual p is linked to individual q it will mean that p may communicate to q, and that q may communicate to p—that is, the link is symmetrical.

too easily. Students commonly remark, upon seeing patterns *C* and *D* for the first time, that pattern *C* is "autocratic," while pattern *D* is a typical "business setup." Actually, of course, insofar as linkage goes they are identical, the only difference being the arrangement of the dots on this paper. Among patterns *A*, *B*, and *C*, however, we may point to some real differences. For instance, in pattern *A* each individual can communicate with two others in the group directly—that is, without relaying a message through some other person. In patterns *C* and *D* there is only one individual in the group who can communicate directly with all the others.

To make another comparison, any individual in pattern *A* can communicate with any one of the others with no more than a single "relay." In pattern *B* two individuals must relay messages through three others in order to communicate with each other.

In a sense, the comparisons just made involve the notion of "distance" between individuals in a pattern. If we adopt some method of counting the "distances" between individuals, we can make some statements regarding differences between and within patterns. In Figure 33.2 a method



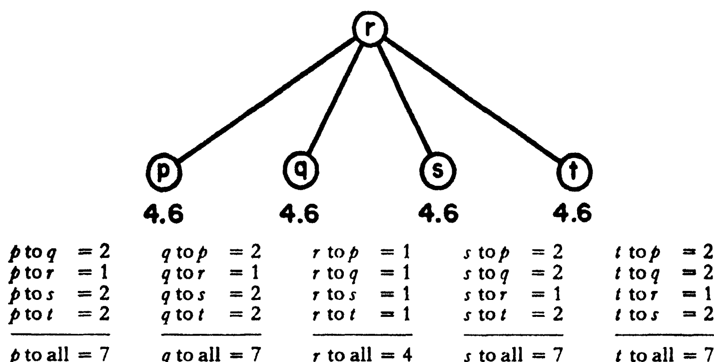
p to *q* = 1	*q* to *p* = 1	*r* to *p* = 2	*s* to *p* = 3	*t* to *p* = 4
p to *r* = 2	*q* to *r* = 1	*r* to *q* = 1	*s* to *q* = 2	*t* to *q* = 3
p to *s* = 3	*q* to *s* = 2	*r* to *s* = 1	*s* to *r* = 1	*t* to *r* = 2
p to *t* = 4	*q* to *t* = 3	*r* to *t* = 2	*s* to *t* = 1	*t* to *s* = 1
p to all = 10	*q* to all = 7	*r* to all = 6	*s* to all = 7	*t* to all = 10

FIG. 33.2. A method of counting "distances" as applied to pattern *B* of Fig. 33.1.

of counting is illustrated as applied to pattern *B* in Figure 33.1. The summation of all internal distances for pattern *B* is 40 ($\Sigma d_{x,y} = 40$). In a similar way, we find that the same summation for pattern *A* is 30 and for pattern *C*, 32. (Fig. 33.3 shows the tabulations of distances in pattern *C*.)

Turning to the question of differences among positions in the same pattern, we see clearly that position *q* in the pattern shown in Figure 33.2 is different from position *p* in the same pattern. One aspect of this difference is shown by the tabulation in Figure 33.2: $d_{p,x} = 10$, $d_{q,x} = 7$. Position *q* in Figure 33.2 has a total distance of 7, just as position *q* in Figure 33.3. In this case the distance from *q* to all others does not differentiate between the two positions. Yet we cannot but feel from an inspection of the patterns that there is a difference between the two *q* positions. We could, of course, point to the fact that in one case *q* has two "neighbors" and in

the other case has only one. But let us consider further the question of distance as such. Since the two patterns in question have different $\Sigma d_{x,y}$ values, it may help if we express the distance "q to all others" in a relative manner. One way of doing this is to calculate for each position the value of the expression: $\frac{\Sigma d_{x,y}}{\Sigma d_{q,x}}$. For position q in Figure 33.2, this quantity would be equal to 5.7; for position q in Figure 33.3, the quantity would



p to q = 2	q to p = 2	r to p = 1	s to p = 2	t to p = 2
p to r = 1	q to r = 1	r to q = 1	s to q = 2	t to q = 2
p to s = 2	q to s = 2	r to s = 1	s to r = 1	t to r = 1
p to t = 2	q to t = 2	r to t = 1	s to t = 2	t to s = 2
p to all = 7	q to all = 7	r to all = 4	s to all = 7	t to all = 7

FIG. 33.3. A method of counting "distances" as applied to pattern C of Fig. 33.1.

be equal to 4.6. In Figure 33.4 are shown such similar values for each of the positions in patterns A, B, and C of Figure 33.1.

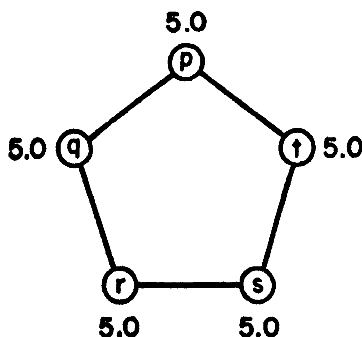


FIG. 33.4. Index of "relative centrality" for each position in three different communication patterns.

If we were to summarize the preceding discussion, we could say that comparisons between two patterns might be made on the basis of "dispersion" (sum of internal distances) defined as $\Sigma d_{x,y}$; and that comparison between positions within the same pattern might be made on the basis of "relative centrality" defined as $\frac{\Sigma d_{x,y}}{d_{x,y}}$ (the sum of all internal distances of the pattern divided by the total sum of distances for any one position in the pattern).

Operational Possibilities of Patterns

Let us turn now to the question of how these patterns of communication might be used by a group. Any sensible discussion of "operation" must, of course, be in terms of some specified task. A simple but interesting one would be the following: each of five subjects is dealt five playing cards from a normal poker deck and has the task of selecting from his hand the one card which, together with the four cards similarly selected by the other four subjects, will make the highest-ranking poker hand possible under these conditions.[2] The cards may not be passed around, but the subjects may communicate over the indicated channels, in the particular pattern being tested, by writing messages.

It is clear that pattern *B* in Figure 33.1 may be operated in a number of ways, or "operational patterns." Two of the possible operational patterns for communicating necessary information are shown in Figure 33.5.

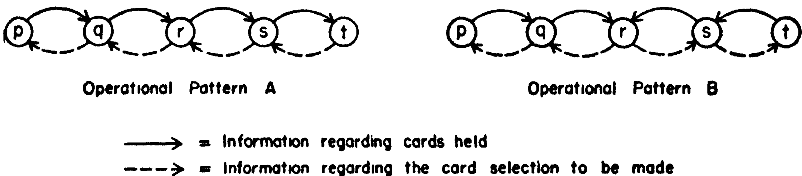


FIG. 33.5. **Two possible "operational patterns" with the same communication pattern.**

Obviously, it is possible for pattern *B* to be so operated that the subject in any one of the five positions will be the one to have all the necessary information first (and presumably decide which card each subject should select). There are no linkage structures which would force a given method of operation into use. We might ask, however, whether there are differences in efficiency between different operational patterns. Two measures of efficiency come naturally to mind: the number of messages required for task completion, and the time required for task completion.

With respect to the number of messages required, it is possible to make a general statement. In terms of the task given above, one may say that each of the subjects has in his possession one-fifth of the information necessary for a solution. Also, all of the information must at some time be present at one position in the pattern. It can be shown that four messages are necessary and sufficient to accomplish this. Since each subject must know the correct card for him to select, an additional four messages will be required. One may say, therefore, that for any patterns with *symmetrical linkage* the number of messages required will be equal to $2(n - 1)$, where n stands for the total number of positions, and that this

[2] We assume subjects with perfect knowledge of poker-hand ratings.

requirement is completely independent of the linkage pattern as such.

With respect to the time it would take to reach a solution in different patterns, we have a somewhat different situation. We must, of course, for any general discussion of speed of solution assume some standard unit of time to be associated with a message.[3] Let t equal the time it takes for information to go from one person to another when they are linked, i.e., when they occupy neighboring positions in the pattern.

(Before going on to a consideration of the patterns under discussion, a relationship between t and the number of individuals in a group should be pointed out. If any linkage pattern is allowed, then it may be stated that the minimum time for solution will have the following relation to the number of individuals in the pattern:

$$t^{min} = x + 1 \text{ when } 2^x < n \leq 2^{x+1}.$$

This relationship leads to some rather interesting conclusions. Let us consider two groups with unrestricted linkage—one group of nine members and one group of 16 members. With a task such as that of selecting the best poker hand, the minimum time necessary for completion would be the same for both groups, although in the first case we would have nine individuals each possessing one-ninth of the information, and in the second case we would have 16 individuals each with one-sixteenth of the information.)

With t defined in this way, it is easy to see that operational pattern *A* in Figure 33.5 will require eight time units, while operational pattern *B* in the same figure will require five time units. Obviously, when more than one message is sent in the same time unit, time is saved. However, if individual p sends a message simultaneously with individual r (as in Fig. 33.6), his message to q cannot possibly contain the information



FIG. 33.6. Relation between timing of message and transmission of information. If r and p send messages simultaneously, p's message cannot contain r's information.

contained in the message from r. We can expect, therefore, that in certain patterns time will be saved at the expense of messages; and doing the task in minimum messages will involve the use of more time units. This is nicely illustrated by pattern *A* in Figure 33.1. In this pattern the problem may be done in as few as three time units, but to do this requires 14 messages; if the problem is done in eight messages (the fewest possible), the number of time units required increases to five.

[3] This is not intended to exclude the possibility that in certain patterns "morale" effects will materially affect the speed with which an individual might perform.

Some Experiments with Selected Patterns

An analysis such as this must sooner or later lead to the question: "Granted that kind of difference has been demonstrated between one pattern and another, is it a difference which will make a difference?" Such a question can be answered only by experiment. Without attempting a detailed account, a brief mention of two experimental studies would be helpful here.

Sidney Smith conducted an experiment[4] at the Massachusetts Institute of Technology with eight groups of college students, using patterns *A* and *B* shown in Figure 33.1. He gave his groups a task which in its essentials was similar to the poker-hand problem described earlier. Instead of playing cards, each subject was given a card upon which had been printed five symbols taken from among these six: ○ △ ✳ □ + ◇. While each symbol appeared on four of the five cards, only one symbol appeared on all five cards. Each group's task was to find the common symbol in the shortest time possible. In each subject's cubicle was a box of six switches, each switch labeled with one of the six symbols. The task was considered finished when each member of the group indicated that he knew the common symbol by throwing the appropriate switch. The switches operated a board of lights visible to a laboratory assistant who recorded individual and group times and errors (an error being the throwing of an incorrect switch). The subjects communicated by writing messages which could be passed through slots in the cubicle walls. The slots were so arranged that any desired linkage pattern could be imposed by the experimenter. No restriction whatever was placed upon the content of the messages. A subject who had the "answer" was at liberty to send it along. The cards upon which the messages were written were coded so that a reconstruction of the communicatory activity could be made.

Each experimental group worked on 15 successive problems. The same six symbols were used throughout, but the common symbol varied from trial to trial. Four groups worked in pattern *A*, and four other groups worked in pattern *B*. No group worked in more than one pattern.

Of the detailed analysis which Smith made of the experimental data, only two findings will be presented here: errors, and the emergence of recognized leaders (see Table 33.1 and Fig. 33.7).

With respect to the emergence of recognized leadership, Smith had each of his subjects answer a questionnaire immediately after the end of the fifteenth trial. One of the questions read: "Did your group have a leader? If so, who?" The answers are shown in Figure 33.7.

While no good theory could be formulated for the differences in numbers of errors, the findings suggested that the individual occupying the

[4] Unpublished; manuscript in preparation.

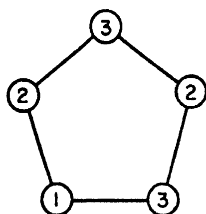
most central position in a pattern was most likely to be recognized as the leader. Also, from observation of the subjects while they worked, it appeared that the morale of the individuals in the most peripheral (least central) positions of pattern *B* was the poorest.

TABLE 33.1

NUMBER OF ERRORS IN TWO COMMUNICATION PATTERNS

Error Category	Pattern A	Pattern B
Average total errors	14.0	7.0
Average group errors	5.0	1.5

NOTE. — Total errors = number of incorrect switches thrown
Group errors = number of problems which on completion contained at least one error
(All figures are averages from the performance of four groups in each pattern. Each group did 15 problems.)



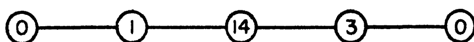


FIG. 33.7. Emergence of recognized leaders in different communication patterns. The number at each position shows the total number of group members who recognized the individual in that position as the leader (Smith's data).

In order to explore these possibilities further, Harold Leavitt did a more detailed study [5] of the same two patterns plus two others. The four patterns he used are shown in Figure 33.8. Leavitt used the same problems and the same experimental setting used by Smith. His findings on errors and leadership recognition are presented in the same form as Smith's data (Table 33.2 and Fig. 33.8).

Leavitt's findings considerably strengthen the hypothesis that a recognized leader (under the conditions of the experiment) will most probably emerge at the position of highest centrality. His findings also lend some support to the hypothesis that errors may be related to pattern properties.

In addition to errors and leadership, Leavitt was interested in the question of morale differences between and within patterns. His subjects were asked two questions to which they responded by ratings from 0

[5] For a detailed account of this experiment, see Harold J. Leavitt, "Some Effects of Certain Communication Patterns on Group Performance" (Ph.D. dissertation, Massachusetts Institute of Technology, 1949).

(very unfavorable) to 10 (very favorable). The data are given in averages of all ratings for subjects in the same pattern (Table 33.3).

In order to check the hypothesis that morale differences exist within patterns and are related to relative centrality, the following analysis of

TABLE 33.2

NUMBER OF ERRORS IN FOUR COMMUNICATION PATTERNS

Error Category	Patterns			
	A	B	E	F
Average total errors	17	10	3	10 *
Average group errors	3	2	1	1

* Leavitt attributes almost all of this error figure to one of the five pattern *F* groups which became confused over the meaning of one member's method of reporting his information.

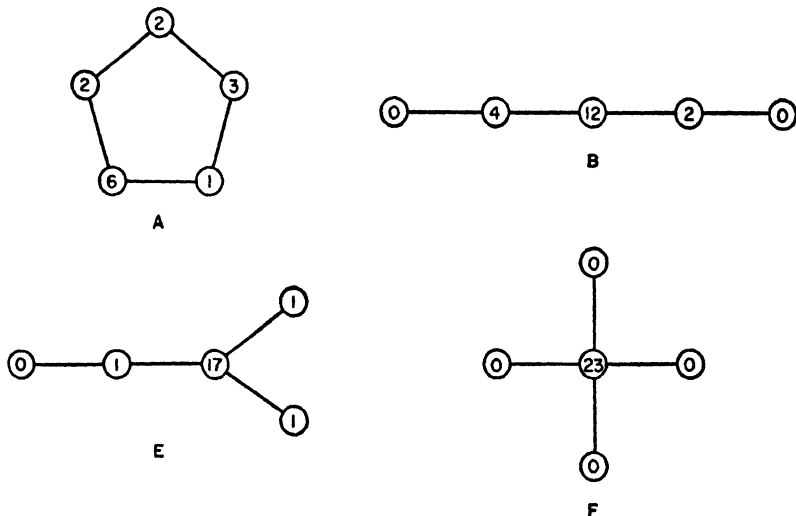


FIG. 33.8. Emergence of recognized leaders in different communication patterns. The number at each position shows the total number of group members who recognized the individual in that position as the leader (Leavitt's data).

TABLE 33.3

DIFFERENCES OF MORALE AMONG FOUR COMMUNICATION PATTERNS

Questions	Average Rating by Pattern			
	A	B	E	F
How much did you like your job?	6.6	6.2	5.8	4.7
How satisfied are you with the job done?	8.0	5.8	6.0	5.4

the responses to the same two questions was made (Table 33.4). The ratings of men who occupied the most peripheral positions in patterns *B, E,* and *F* were averaged together; the ratings made by men in the most central positions of the same three patterns were also averaged together. All ratings made by subjects in pattern *A* were omitted from these calculations for the obvious reason that no one is most central or most peripheral in that pattern.

On the basis of a detailed study of all the data yielded by his experiments, Leavitt makes the following comments.

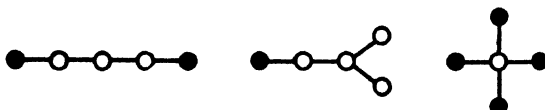
Pattern *F* [6] operated as expected in all five cases. The peripheral men sent their information to the center where the answer was arrived at and sent out. This organization usually evolved by the fourth or fifth trial and was maintained unchanged throughout the remaining trials.

TABLE 33.4

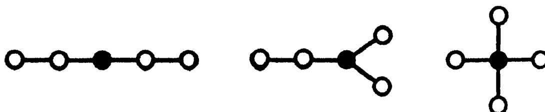
DIFFERENCES OF MORALE RELATED TO RELATIVE CENTRALITY OF POSITION

Questions	Average Rating by Position in Pattern	
	For 35 Individuals in the Most Peripheral Positions *	For 15 Individuals in the Most Central Positions †
How much did you like your job?	3.2	8.8
How satisfied are you with the job done?	4.6	7.8

* As represented here (black dots):



† As represented here (black dots):



Pattern *E* operated so that the most central man got all the information and sent out the answer. Organization evolved more slowly than in pattern *F*, but, once achieved, was just as stable.

Pattern *B* was not as stable as patterns *E* and *F*. Although most of the times the answer was sent out by the individual in the most central position, this function was occasionally performed by one of the men on either side of him. Organization was slower to evolve than in patterns *E* and *F*.

Pattern *A* showed no consistent pattern of organization. Subjects, for

[6] In this question, pattern letters used in Figure 33.8 have been substituted for the letters used in Leavitt's report.

the most part, merely sent messages until they received or could work out the answer themselves.

A Proposed Experiment Using the Same Patterns but a Different Task

In the Leavitt experiment, the normal behavior of a subject in working toward a solution was to send to the others a list of the five symbols appearing on his card. Occasionally, however, something quite different would occur. The subject would send, instead, the one symbol (out of the total six symbols)[7] which was *not* on his card. The advantages of this method in saving time and avoiding possible error are obvious. In a sense, this procedure is a "detour" solution of the problem confronting the subject. The whole task situation was such as to suggest strongly the straightforward action of sending along the symbols one had, rather than the symbol one had not. Although the frequency of occurrence of this insight was fairly even in the groups, its adoption by the group as a method of work was not. It was used by two of the five groups in pattern *A*, by one of the five groups in pattern *B*, and by none of the groups in patterns *E* and *F*. While these differences could not be demonstrated to be significant, they excited considerable speculation. In individual psychology, it has been shown repeatedly that an individual's frame of reference may be such as to inhibit effectively the solving of a problem requiring a detour. With the groups in question, the insight invariably occurred to some member or members. Why, then, did it not spread throughout the group in every case? Might it be that in certain communication patterns the probability of effective utilization of the insights that occur is greater than in others? It was felt that if a more suitable task could be devised, some relationship between the occurrence and utilization of insights and communication pattern might be uncovered.

A task has been constructed which seems to be a step in the right direction. Preliminary trials with it are encouraging. The task consists essentially of forming squares from various geometric shapes. In Figure 33.9 are shown the 15 pieces which make up the puzzle and how they go together to form five squares.

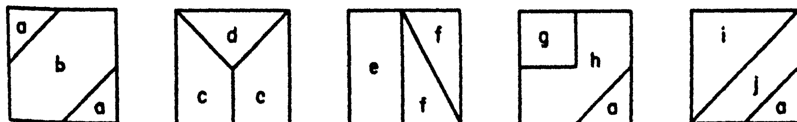


FIG. 33. 9. Experimental puzzle. The 15 pieces may be arranged as shown to form five squares.

[7] He could see all six symbols on his box of six switches.

Out of these shapes, squares may be made in many ways. Some of the possible combinations are: *ccaa, eaaaa, eaag, ffaaaa, ffca, ffgaa, ica,* etc. However, if, using all fifteen pieces, five squares must be constructed, there is only one arrangement that can succeed—that shown in Figure 33.9. In the experimental situation the pieces are distributed among the five subjects. They are told that the task will be successfully completed when each subject has a square before him and no unused pieces. Messages and pieces may be passed along open channels.

The initial distribution of the pieces may be made so that the probability of "bad" squares being formed is increased ("bad" squares being any which, perfect in themselves, make a total of five squares impossible). A possible distribution is given in Figure 33.10.

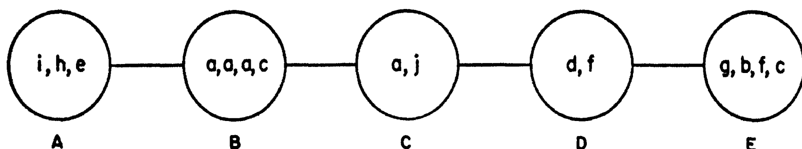


FIG. 33.10. A possible distribution of the pieces of the puzzle (Fig. 33.9) among the positions of a communication pattern.

As can be seen, the pieces with which an individual starts may suggest a particular composition. Or, the pieces an individual starts with may suggest nothing at all and therefore be speedily traded. Let us look at the situation at position *A* in Figure 33.10. The pieces *i,h,e* do not readily suggest a combination of themselves. We may assume that the subject will pass one of the three to position *B*. At position *B*, however, the situation is quite different. The combinations *ace,* or *aaah,* or *aci* all form squares which if completed will lead to group failure, so that any piece received from position *A* merely suggests possible "wrong" squares. In preliminary trials the "bad" squares appear with great regularity. The point of the experiment is what happens once these deceptive "successes" occur. For an individual who has completed a square, it is understandably difficult to tear it apart. The ease with which he can take a course of action "away from the goal" should depend to some extent upon his perception of the total situation. In this regard, the pattern of communication should have well-defined effects.

A formal experiment using this task has not yet been done. Preliminary runs (making use of various communication patterns and concerned primarily with experimental method) have revealed, however, that the binding forces against restructuring are very great, and that, with any considerable amount of communication restriction, a solution is improbable.

Concluding Remarks

The studies, so briefly discussed in this chapter, if they do nothing more, suggest that an experimental approach to certain aspects of social communication is possible and that, in all probability, it would be practically rewarding. Although the problem of effective communication is an old one, recent trends are bringing to it a new sense of urgency. More and more it is becoming clear that any fundamental advance in social self-understanding must rest upon more adequate intercommunication. In areas where effective and highly integrated social effort is required, the problem is particularly critical. This is nowhere better illustrated than in scientific work. In many fields, it has become impossible to think in other terms than research teams. These groups, aside from the ordinary problems of communication which attend organization, face a whole new set of problems arising from the current emphasis upon "security." In practice, security is invariably translated into "communication restriction." In a sense, the experiments discussed above explore precisely this question: What happens to the performance and morale of working groups when communication is restricted in one way rather than another?

The experimental evidence is provocative. Generalization at such an early stage of work is dangerous, but one is tempted to make a tentative step. It would seem that under the conditions imposed in the experiments, differences between certain patterns very probably exist. The differences most clearly revealed by the experiments are with respect to (*a*) the location, in the pattern, of recognized leadership; (*b*) the probability of errors in performance; and (*c*) the general satisfaction of group members.

Further, we note that in patterns with a high, localized centrality, organization evolves more quickly and is more stable, and errors in performance are less. At the same time, however, morale drops. It is conceivable that poor morale would, in the long run, affect stability and accuracy negatively. The experimental runs of 15 trials conducted by Smith, if extended to a larger number of trials, might well begin to show this effect.

More speculative, at present, is the question of the occurrence and utilization of insight. The preliminary trials with the "five squares" puzzle, while few, are dramatic. Every group succeeded in forming two, or three, or four squares. But the ability to restructure the problem, to give up the partial successes, varied widely from pattern to pattern. If the indications of the few experimental runs that have been made to date are any guide, both occurrence and utilization of insight will be found to drop rapidly as centrality is more and more highly localized. In one

group, the individual to whom the necessary insight occurred was "ordered" by the emergent leader to "forget it." Losses of productive potential, in this way, are probably very common in most working groups, and must be enormous in society at large.

36

Differentiation of Roles in Task-oriented Groups

Harold Guetzkow

An important feature in the development of groups is the differentiation of roles into an organizational structure.[1] In newly forming groups such differentiation often accompanies the occupancy of the developing positions by particular persons. In this work on the development of experimental organizations in a laboratory, factors related to these two processes have been isolated.

The first part of this inquiry demonstrates the distinction between role differentiation and development of organizational structure. The second part analyzes group processes and personal characteristics associated with role differentiation.

Description of Experiment

The experiments reported in this paper used the communication situation initially suggested by Bavelas (2). The two laboratory "runs" analyzed in this report involved 76 groups of five men each operating in the experimental problem-solving situation designed by Leavitt (8), but modified to permit study of the group's handling of its operating task separately from its organization problem.

The task was identical to that used by Leavitt: the five subjects each had five pieces of a standard set of six pieces of information; their task on

This chapter was prepared especially for this volume.

[1] See Guetzkow and Simon (6), and Guetzkow and Dill (5); full details of the experimental procedures are described in a microfilm (1). The research was supported by a grant from the research funds of the Graduate School of Industrial Administration, Carnegie Institute of Technology. Hearty thanks are due to Messrs. K. Hellfach, A. D. Martin, and F. Metzger and to Mrs. Martha Pryor, Miss Anne E. Bowes, Mrs. Marion Bement, and to Mrs. Janet Stein for aid in conducting the investigation and help in analyzing its results. The manuscript was prepared during 1956–57, at the Center for Advanced Study in the Behavioral Sciences. My collaborators, Professors W. R. Dill and H. A. Simon, helped in the development of ideas included in this paper in their usual stimulating way.

a given trial was to determine which piece was common and then to identify this common piece for the experimenter.

None of the participants had been exposed to this laboratory situation before. Each group worked for about two hours during which time the operating task was repeated twenty times. The time needed for each completion of the repeated task varied from over two minutes to less than one minute. The five subjects were seated around a circular table, screened from each others' view by five radial partitions. Intertrial periods of not more than two minutes each provided opportunity for work on the group's organizational problems. After the preliminary instruction period, there was no oral communication among the participants. During the task trials, the subjects passed messages through slots in their partitions to each other on precoded cards. During the intertrials, messages were written by the subjects on blank cards and then exchanged among themselves. Each subject was given a letter, which was used by him in identifying his message and the slots which opened into each cubicle. When the missing information had been obtained by each, the experimenter was so informed and the task trial was ended by the automatic sounding of a bell. By a signaling arrangement, the subjects were allowed to terminate the intertrial period at any time they wished before the end of the two minutes allowed them.

Three hundred and eighty male freshmen engineering students at Carnegie Institute of Technology served as subjects for the experiments. The groups were equated with respect to the average and the spread of intellectual ability among their five members through the use of ACE Psychological Examination scores. Each group was composed of one man from each of the Carnegie quintiles.

The task problem had been reduced to a routine through the pre-experimental instructions and practice period. The urgent problem before each group was how to organize itself, given its communication net. Three types of nets were used in a quartet of variations (see Fig. 1). Twenty of the groups operated without restriction, *all-channels* being open for communication ("All-Channel" groups). Twenty-one groups were placed in a *circle* net in which the members could communicate

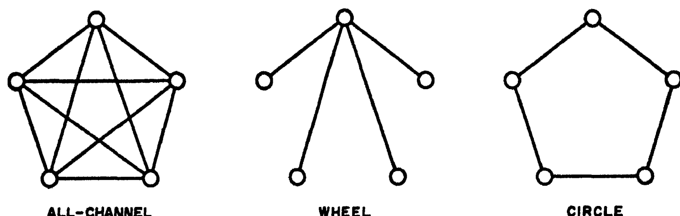


FIG. 1. Open channels used in the three nets.

only with those immediately to their left and right ("Circle" groups). Twenty groups were placed in the circle net during the task trials, but these communication restrictions were removed during the intertrial period ("Circle-all-channel" or "Circle-AC" groups). Fifteen of the groups operated with severe restrictions in a *wheel* arrangement in which the four spokes could communicate only with the hub ("Wheel" groups). The apparatus could be easily rearranged for the different groups by mechanically closing or opening the communication slots. The subjects were not told by the experimenter of the pattern used in arranging their net either before or during their work period in the laboratory.

Organization as Task Specialization

There were large differences among the 76 groups in the four nets as to whether and how they organized themselves for the performance of their operating tasks (5, 178–179). In the groups which differentiated, it was possible for the experimenter to distinguish three roles on the basis of the interactions portrayed in their task messages.

1. Some participants performed the specialized functions of receiving information, forming the solution, and then sending answers; these organized activities may be thought of as constituting a "keyman" role.
2. Other participants would merely send their own missing information to others and then later receive the answer to the problem; this package of actions is designated as the "endman" role.
3. Some individuals usually passed on the missing information of others as well as their own, and then, if they received the answer, relayed the answer to one or more neighbors; this grouping of activities is designated as the "relayer" role.

When two or three roles are performed simultaneously in an interlocked fashion within a group, one obtains hierarchical structures (5). In the Wheel and All-Channel groups, one typically obtained a two-level hierarchical organization, with four endmen sending their information to the keymen, who in turn formed the solution and communicated the answer to the endmen. In the third of the Circle and Circle-AC groups which organized, the hierarchical structure had three levels, with two relayers serving as intermediaries between two endmen and the keyman.

In the so-called "unorganized" Circle and Circle-AC groups, the subjects eventually all received information about the four missing symbols and then each formed his own solution to the problem. In such situations there was no need to exchange answers. Sometimes the information exchanges became stable, developing quite systematic "each-to-all" patterns. But because each participant performed identical functions (often

in an identical way), there sometimes was no role specialization in these "unorganized" groups.

As has been argued elsewhere (4, 380–81), it seems fruitful to distinguish "organizations" from face-to-face, "small" groups, by virtue not of their size but of the relatively large amount of indirect, mediated interaction which occurs among the members of the former. When these mediated interactions are more or less stably structured in somewhat elaborate arrangements in "organized" groups, it is convenient to distinguish them from the "unorganized" groups in which the interactions, although mediated, are unstable and less involved. As is usually the case in working with a set of multi-dimensional characteristics, these bipolar typologies are not discrete.

A quantitative description of the extent and type of role specialization which occurred in the various groups is presented in Table 1. The coder

TABLE 1

DISTRIBUTION OF ROLES
(NUMBER OF PERSONS IN ROLE)

ROLE	ALL-CHANNEL		CIRCLE AND CIRCLE-AC, ORGANIZED *		CIRCLE AND CIRCLE-AC, UNORGANIZED *		WHEEL	
Keymen	23 †	23%	15 †	21%	30 †	23%	15	20%
Relayers	17	17%	28	40%	39	30%	0	0
Endmen	46	46%	27	38%	35	27%	60	80%
Persons without roles	14	14%	0	0%	26	20%	0	0%
Totals	100		70		130		75	

* One Circle-AC group was omitted from this and subsequent tabulations because of its marginality to both the organized and the unorganized categories. The Circle group which developed a "chain" in sending information while using a three-level hierarchy arrangement for returning the answers (6, 246) was classified as "organized" in the study, although it was omitted in an earlier analysis (5, Tables 3 and 4).

† The classification of more than one person per group as a keyman results when two persons within a single group played that role at different times.

assigned individuals to roles by following the definitions given above. To be classified as occupying a role, it was necessary for an individual to have performed the specified behaviors for four or more consecutive trials. Sometimes an individual occupied two or three roles during the course of the twenty trials. To avoid multiple classifications, a keyman who sometimes also behaved as endman or relayer, was classified only as "keyman," as long as the keyman role had been occupied for a minimum of four consecutive trials. If an individual qualified both as relayer and endman, he was "classified according to the role he held for the longer period of time" (quotation from coding instructions).

A second person, using the code written by the first coder, agreed in as-

signing the same role (including "no role") to 85% of the subjects represented in Table 1. There was variation in the accuracy with which different types of groups could be categorized. The agreement among the coders was 100% for the Wheel groups, 95% for the organized Circle and Circle-AC groups, and 85% for persons in the All-Channel groups. Persons in the unorganized Circle and Circle-AC groups were more difficult to classify, as is indicated in an agreement of 71% by the two coders. The accuracy of classification of persons in the three different roles varied too: 85% for keymen, 63% for relayers, and 78% for endmen.

Examine the results presented in Table 1. In the All-Channel groups, the inability of three of the twenty groups to organize is reflected in 14% of the subjects having differentiated no roles for any four consecutive trials. In these All-Channel groups, six of the seventeen organized groups used a three-level hierarchy in returning answers from keymen to endmen, as evidenced in the relayers reported in Table 1. The organization of two-level hierarchies in all of the Wheel groups after the fourth or fifth trial is reflected in the assumption of keymen roles by 20% of the members and occupancy of endmen roles by the remaining 80%.

Compare the role specialization in the 14 organized groups with that which occurred in the 26 unorganized groups in the Circle and the Circle-AC nets. Although only 20% of the members of the latter groups failed to develop operationally identifiable roles, all of these groups were unorganized. Had the 26 persons without roles been members of common groups, one still could account for only five or six of the 26 groups which failed to organize. Nor can one account for the failure to organize because of an insufficiency of keymen—there being slightly more in the unorganized than in the organized Circle and Circle-AC groups (23% to 21%). There is a deficit of relayers and endmen. But if the persons who did differentiate relayer and endman roles were collected into common groups (along with sufficient keymen), 18 to 19 of the 26 "unorganized" groups might have been organized. Examination of the actual distribution of the roles in the 26 unorganized groups in the Circle and Circle-AC nets reveals there is a full complement of one keyman, two relayers, and two endmen in 14 of the groups. The difficulty, then, is not in the failure of the members to develop individually appropriate role behaviors.

The failure lay in the groups' inabilities to interlock their roles appropriately at the proper times. Further analysis (5, 202) revealed that this inability was largely caused by the failure of the groups to communicate during the intertrial periods about their organizational problem. Thus, the development of unorganized groups is due fundamentally to the failure to interlock roles into an organization, not to a dearth of differentiated roles.

Factors Associated with Role Differentiation

The finding that roles emerge before groups become organized indicates that conditions associated with the differentiation of roles may be different from those associated with the macro-organization of the group. Let us first explore factors which are associated with role differentiation. In the discussion we will compare them with our hypotheses about macro-organizational development, as analyzed elsewhere (5). In displaying the co-relations which exist among the variables in this paper, we will conform to the common practice of stating many of our hypotheses in the form of causal interrelationships. It is understood that the data supporting the hypotheses do not demonstrate the existence of causality.

Factors associated with role differentiation may be viewed as of two kinds—those *external* environmental factors which induce role formation because of the task components, and those *internal* processes involved in the establishment of particular persons in particular roles.

Role Formation as Induced by Requirements of External Environment

Task characteristics. Role formation would seem to be intimately associated with the functions demanded by the tasks. Our operational description of the three roles in terms of the components of the task is: information exchange, solution formation, and answer exchange. But the task characteristics did not determine just how the components should be assembled into differentiated roles—nor whether these roles need be continuously played by one set of individuals or interchanged among them. In Table 2, we have hypothesized the various combinations in which the task components might have been assembled in functional roles. All but one were found to have occurred. By its very nature, the task did not allow persons to specialize only in solution formation, for to form solutions on receipt of information from one's colleagues was imperative. The selection of particular combinations, with the one exception, therefore was not due to the task characteristics themselves.

Communication restrictions. The communication restriction was an important factor in inducing particular forms of role differentiation. The use of a circle net by the Circle and Circle-AC groups necessitated the use of three- rather than two-level hierarchies. But these restrictions did not necessitate the use of hierarchy roles, as was demonstrated in the evolution of a set of interlocked but identical roles in a "round-robin." In this form of organization, each participant received missing information, added his own symbol to the compilation, and then routed it around the "robin" so that each could form his own solution. The all-

channel net was not nearly so restrictive—and other ways of interlocking roles were developed (5, 178). Even the most restrictive variation used—the wheel net—did not prescribe completely the nature of the role differentiation as one of the subjects in the "spokes" of the wheel (who in our experiments actually all played endman roles) could have been "keyman" with the evolution of a "lieutenant keyman" at the hub.

TABLE 2

FUNCTIONAL ROLES AS A PRIORI COMBINATION OF TASK COMPONENTS

TASK COMPONENTS	ROLE DESCRIPTIONS
Information Sending (IS) alone	Endmen.
Solution Forming (SF) alone	No role exists.
Answer Sending (AS) alone	Relayers in structures in which 2-level hierarchies are used for information exchange and 3-level ones for answer exchange.
IS and SF combinations	All persons in "round-robins" used for information exchange, and in many "each-to-all" groups.
IS and AS combinations	Relayers in groups using 3-level hierarchies for both information and answer exchanges.
IS and SF and AS combinations	Persons in "each-to-all" and "round-robin" groups, in which exchanges include both information and answers.

The time of role differentiation also seems to have been prescribed in part by the communication restrictions. In the All-Channel groups, the average of the numbers of the trials on which the keymen first differentiated their roles was 5.2 ($\sigma = 4.2$). The endmen differentiated their roles soon thereafter, averaging 5.7 trials ($\sigma = 3.4$). The relayers lagged, averaging 8.1 ($\sigma = 3.9$) as the trial of their differentiations. The differences between relayers and both keymen and endmen are significant (relayers *vs.* keymen, $t = 2.13$, $p < .05$; relayers *vs.* endmen, $t = 2.33$, $p < .05$). Contrariwise, there were no such contrasts in the times at which the three roles were differentiated in the communication restricted Circle and Circle-AC groups. The average of the first trials at which differentiation occurs for the keymen, relayers, and endmen in these two types of organized groups were 6.9 ($\sigma = 2.7$), 6.2 ($\sigma = 3.2$), and 6.5 ($\sigma = 4.2$), respectively, with none of the differences significant.

Thus, two pieces of evidence indicate that the development of roles is prescribed to an extent by differences in communication restriction. The type of role which may be developed is prescribed in part by the com-

munication restrictions; the time at which the roles emerge also is determined in part by the same communication restriction.

Group goal. The differentiation of roles in these experimental groups would seem to have its central origin in the efficiency goals posited by the experimenter in the instruction, "Your team is competing with the other five-man groups to see which group is fastest at getting the answer. The shorter the time, the better your team score." Two preconceptions may have been evoked in our subjects: a crude notion of the inverse relation of the volume of messages to efficiency of performance, and a cultural bias favoring hierarchical arrangements. Groups adopting an each-to-all solution averaged .84 minutes per task trial during their three fastest trials; groups adopting a hierarchical organization averaged .47 minutes. The division of labor increased for efficient group performance. This division of labor was expressed in the differentiation of relatively stable roles. Role stability may have been enhanced by the goal, for with but twenty trials in all there may have been reluctance to experiment with change.

That such role specialization need not be attached stably to particular persons is evidenced in one pilot variation (3) in which the goal instruction was changed to induce interindividual instead of intergroup competition. In four pilot groups run within an all-channel net, the members were informed their success would be evaluated individually in terms of the rapidity with which each reported the solution to the experimenter rather than in terms of their group's overall performance. Three of the groups bogged down, developing no organization. The members of the fourth group developed a quasi-stable coalition among themselves, the terms of which were to organize a two-level hierarchy in which the keyman role was passed trial-by-trial from person to person—so that each member could report the solution first on one out of every five trials.

Summary. Three facets of the task environment, as imposed by the experimenter, seem to be orderable in terms of their impact on the role formation in the experimental situations as follows: task characteristics (weakest), communication restrictions, and group goal (strongest).

Internal Processes Involved in the Differentiation of Roles

Had the experimenter so chosen, it probably would have been comparatively easy—given the authority relationships obtaining between experimenters and subjects (6, 235)—to have designated that three functional roles should be employed and then to have assigned particular subjects to these roles. Had that been done, both role formation and occupant assignment would have been an initial condition in the experiment constituting part of the external environment. Although research

work is needed on the impact of different modes for the designation of positions and their occupancy, these experiments focused on organizational development without formal designation devices.

The mechanisms involved in the establishment of certain persons in particular positions may be divided into those rooted in the action characteristics of the group, and those rooted in the personal characteristics of the members. These experiments yield more information about the former than the latter, as no detailed personality assessments were made of the participants.

Mechanisms Related to Group Interaction

In the wheel net, selection of particular people for keyman and endman roles was a function of communication restrictions. In the other three nets, however, the five persons were placed in functionally equivalent communication points at the beginning of the first trial. What happens as the group develops to establish particular persons in particular roles?

Establishment by chance. During the first few trials there was much random activity; the subjects seemingly sent information to each other without rhyme or reason. These initial chance-like events, then, might be

TABLE 3

SELECTION OF KEYMEN BY CHANCE ON FIRST TRIAL

	ALL-CHANNEL	CIRCLE	CIRCLE-AC
Total number of persons who formed solutions:	42	46	45
Number who became keymen	10	15	11
% keymen	24%	33%	24%
Total number who failed to form solutions:	43	44	45
Number who became keymen	12	10	10
% keymen	38%	23%	22%
Total number of group members:	85	90	90
Number who became keymen	22	25	21
% keymen	26%	28%	23%

thought of as selecting a person who, once having served as solution-former, continues thereafter in the key position. On the basis of this "chance" hypothesis, the persons forming the solution on the first trial eventually would occupy keyman roles as the organization differentiated.

In those 18 All-Channel, 18 Circle, and 18 Circle-AC groups in which one or more keymen become differentiated, it is possible to check the extent to which the solution-formers on the first trial become keymen in the semi- or fully stabilized organizational structures. The hypothesis is tested in Table 3. There is no significant difference between the proportion of persons who become keymen from among those who formed solutions on the first trial and the proportion who become keymen from among those who fail to form solutions. "Being lucky" in becoming a solution-former "by chance" on the initial trial does not help one become keyman in subsequent trials. These results contradict the hypothesis and indicate that some other mechanisms must be involved in selecting out the keymen.

Establishment by withholding information. The "common symbol" problem made it possible for an individual to insure himself of the key role by withholding his information from the others, provided the latter did not try to use the same device. This procedure was used by only one subject. In fact, there was only a gradual decline in the number of information messages the keymen sent, even after they had become the solution-formers and answer-senders. This means we must look elsewhere for an explanation of how certain persons became the keymen.

Role differentiation on the basis of situational perceptions. Was role development associated with differences in the adequacy of the subjects' perception of the organizational situation? Our procedures yielded two sets of data from which estimates of such perceptions were obtained. During the intertrial periods participants exchanged messages in efforts to perceive the structure of the communication net and their emerging organization. At the end of the experiment, the participants were asked to explain how their groups were organized and to diagram the communication net.

TABLE 4

INTERTRIAL MESSAGES ABOUT SITUATION BY ROLES *
(NUMBER OF UNITS SENT IN 19 INTERTRIALS)

Role	All-Channel		Circle and Circle-AC, Organized		Circle and Circle-AC, Unorganized	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Keymen	5.1	4.6	8.1	6.3	5.0	4.3
Relayers	6.8	6.4	6.4	5.5	6.5	5.4
Endmen	3.3	3.5	5.8	4.7	5.2	5.1

Significance tests In the All-Channel groups a t-test of Relayers *vs* Endmen was significant ($t = 2.7$, $p < .01$), as was the t-test of (Keymen plus Relayers) *vs*. Endmen ($t = 2.6$, $p < .02$).
* Number of persons occupying each role is given in Table 1.

The All-Channel, Circle, and Circle-AC groups devoted an average of 16, 29 and 21 per cent of their intertrial messages, respectively, to understanding the nature of their communication net and to inquires about and evaluations of proposed organizational plans. The average numbers of such units in their messages over the 19 intertrials for persons within the three roles are presented in Table 4. These findings indicate that keymen and relayers, in general, tend to send more messages concerning their perception of the structure than do endmen, although the differences are significant only in the All-Channel groups.

The coding used on the intertrial messages indicates the amount of effort the subjects devoted to perceiving their situation. This measure has ambiguity in its meaning—more effort may be stimulated by the inadequacy of perceptions, and contrariwise, more effort may yield superior levels of perception. At the end of the experiment, open-ended questionnaires were given the participants about the functioning of the group, about each participant's own role within the group, and about the group's communication net. On the basis of this information, it was possible to decide whether each participant described his own role and that of his colleagues correctly or incorrectly, or omitted mention of some persons. The accuracy of organizational perceptions of the subjects was conceived as a ratio of the number of correct observations minus the incorrect observations to the total number of roles operationally identified by the experimenters (Table 2). The average of these ratios for persons occupying various roles is presented in Table 5. In interpreting these

TABLE 5

ACCURACY OF ORGANIZATIONAL PERCEPTION BY ROLES *
(CORRECT MINUS INCORRECT ROLE IDENTIFICATIONS OVER TOTAL ROLES PRESENT)

	All-Channel		Circle and Circle-AC, Organized		Circle and Circle-AC, Unorganized	
Role	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Keymen	.52	.35	.68	.46	.16	.42
Relayers	.50	.37	.58	.45	.18	.35
Endmen	.50	.39	.37	.47	.02	.29

Significance tests: t-tests of (Keymen plus Relayers) *vs.* Endmen were significant both in the Circle and Circle-AC, Organized groups ($t = 2.1, p < .05$), and in the Circle and Circle-AC, Unorganized groups ($t = 2.0, p < .05$).
* Number of persons occupying each role is given in Table 1.

figures, it must be remembered that an omitted response on the part of the subject does not necessarily imply lack of knowledge—it may indicate communication failure in the open-ended questionnaire, as no individual probing was undertaken by the experimenters. The results are some-

what disparate with those obtained from the intertrial message measure (Table 4). This is not unexpected, since the correlation between the two estimates is but .13 (significant at the 5% level), based on 258 of the subjects.

The superiority of the keymen and relayers compared with the endmen found in Table 4 holds for the organized Circle and Circle-AC groups in Table 5, but fails to be the case in the All-Channel groups. This discrepancy between Tables 4 and 5 may reflect the difference in time at which the two measures sampled perceptual adequacy. Did the complete absence of communication restrictions allow endmen in the All-Channel groups finally to gain knowledge of the organization situation equal to that of their keyman and relaying colleagues, even though they did not *send* messages about these matters during the course of their organizational development?

A second discrepancy between Tables 4 and 5 is that in the unorganized Circle-AC groups there was no significant difference between the keymen-relayers and the endmen in intertrial messages (Table 4), while there was in the accuracy measure obtained at the end of the experiment (Table 5). This finding confirms the time-honored proposition that effort does not always bring achievement. The new findings, thus, do not entirely contradict our earlier hypothesis that relative adequacy of perceiving the organizational situation is associated with occupancy of keyman and relayer roles.

Role differentiation on the basis of organizational planning. Although there was no designation of roles by the experimenter, did the participants overtly plan roles for themselves and for others in the course of

TABLE 6

INTERTRIAL MESSAGES CONCERNED WITH SPECIFIC ORGANIZATIONAL PROPOSALS BY ROLES *
(NUMBER OF UNITS SENT IN 19 INTERTRIALS)

ROLE	ALL-CHANNEL		CIRCLE AND CIRCLE-AC, ORGANIZED		CIRCLE AND CIRCLE-AC, UNORGANIZED	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Keymen	7.1	2.1	4.0	3.2	0.6	1.4
Relayers	2.9	3.4	1.7	2.4	0.5	0.9
Endmen	2.8	4.2	1.2	1.8	0.4	0.7

Significance tests:

	All-Channel	*Circle and Circle-AC, Organized*
Keymen vs. Relayers	$t = 4.7, p < .001$	$t = 2.6, p < .02$
Keymen vs. (Relayers + Endmen)	$t = 3.2, p < .01$	$t = 3.6, p < .001$

* Number of persons occupying each role is given in Table 1.

their intertrial communications? Members of the All-Channel, Circle, and Circle-AC groups respectively devoted 30%, 12%, and 14% of their intertrial messages to organizational planning activities. These planning message units were of three kinds—specific messages, either (*a*) proposals

TABLE 7

INTERTRIAL MESSAGES CONCERNED WITH PROMULGATION OF SPECIFIC PROPOSALS BY ROLES *
(NUMBER OF UNITS SENT IN 19 INTERTRIALS)

ROLE	ALL-CHANNEL		CIRCLE AND CIRCLE-AC, ORGANIZED		CIRCLE AND CIRCLE-AC, UNORGANIZED	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Keymen	1.2	1.6	1.1	2.0	0.4	0.7
Relayers	1.8	2.3	1.2	1.8	0.3	0.6
Endmen	2.7	3.0	1.4	2.1	0.5	1.3

Significance tests: In the All-Channel groups a *t*-test of Keymen *vs.* Endmen was significant ($t = 2.2$, $< .05$).
* Number of persons occupying each role is given in Table 1.

of oneself or another individual as keyman, or (*b*) promulgations of specific suggestions, and (*c*) more general, somewhat abstract proposals, such as "Why don't we all send our messages clockwise?" The average

TABLE 8

INTERTRIAL MESSAGES CONCERNED WITH GENERAL ORGANIZATIONAL MATTERS BY ROLES *
(NUMBER OF UNITS SENT IN 19 INTERTRIALS)

ROLE	ALL-CHANNEL		CIRCLE AND CIRCLE-AC, ORGANIZED		CIRCLE AND CIRCLE-AC, UNORGANIZED	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Keymen	2.8	3.8	1.7	2.2	1.0	2.2
Relayers	2.1	2.2	1.3	1.4	0.5	1.2
Endmen	0.7	2.1	1.1	2.2	1.1	2.2

Significance tests: In the All-Channel group *t*-tests of the Endmen *vs.* Keymen ($t = 3.0$, $p < .01$) and *vs.* the Relayers ($t = 2.2$, $p < .05$) are both significant.
* Number of persons occupying each role is given in Table 1.

numbers of these three types of planning messages sent during the course of the 19 intertrials by persons within each role are presented respectively in Tables 6, 7, and 8.

In the specific messages incorporating organizational proposals (Ta-

ble 6), the differences between the keymen and the other roles are dramatic. About half of these messages are particular plans, proposing oneself as keyman, and most of these proposals were disseminated by the endmen and the relayers (Table 7).

The more general planning messages (Table 8) indicate an ordering of the roles somewhat similar to those found in the intertrial messages concerned with perceiving the organizational situation (Table 4). As in the perceptual messages, the keymen were more given to generalized planning than the endmen.

So far, no use has been made of comparisons between the All-Channel and organized Circle and Circle-AC groups versus the unorganized Circle and Circle-AC groups, exhibited in Tables 4 through 8. These data, along with the role differences already discussed enable us to distinguish between factors which induce role formation versus those which relate to both role formation and the interlocking of roles into a social structure. The volume of intertrial messages displayed in Table 4 is approximately the same for both organized and unorganized groups. However, in Tables 5 through 8, there are impressive differences between the two types of groups, ranging from a ratio of 1 to 2 to a ratio of 1 to 6. Thus, the accuracy and planning measures are related not only to role formation, but as importantly to the interlocking of roles into group structures.

Summary. The role of keyman clearly is not determined by chance factors operating in the initial trial. Nor did the persons who became keymen bludgeon their way into occupancy of the role by withholding their own piece of information from the other members of their group. It seems that keymen and relayers establish themselves by having more adequate perceptions of their organizational situations than do endmen —and that keymen, in turn, gain their special position of leadership in these experimental situations by self-designation of the key role to themselves, the designation being relayed by the other members of the group to each other.

Mechanisms Related to Personal Characteristics

Role Differentiation by Means of Intellectual Ability

Intellectual ability is often related to role occupancy, as documented in Stogdills' survey of the leadership literature (11). An American Council on Education Psychological Examination score was obtained on each subject.[2] The ACE is a general aptitude test of intellectual ability,

[2] Through the courtesy of Drs. Roland Moore and Robert Morgan of Carnegie Tech's Bureau of Measurement and Guidance, scores were provided for approximately

both quantitative and verbal. These data allow us to check whether role occupancy is associated with intelligence in these experimental situations, as well as to determine indirectly whether intelligence played a part, *per se,* in the interlocking of the roles into organizational structures. In composing the groups, the experimenters matched subjects so that each group had one person coming from each of five ACE levels. Thus, no group could fail to organize because of low intellectual ability.

Did the varying intellectual ability of the subjects induce differences in role occupancy among the five persons all of whom initially had equipotential locations within the social situation? The average raw ACE scores for persons in the three roles are presented in Table 9. In the All-Channel groups, there is a significant difference ($t = 2.0$, $p < .05$) between the ACE scores of the keymen and both the relayers and the

TABLE 9

INTELLECTUAL ABILITY BY ROLES *
(RAW SCORES FOR TOTAL ACE TEST)

Role	All-Channel		Circle and Circle-AC, Organized		Circle and Circle-AC, Unorganized	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Keymen	138.5	18.8	129.9	22.9	131.9	21.2
Relayers	122.1	16.9	132.5	20.3	125.1	18.8
Endmen	125.3	20.3	123.2	18.8	125.1	23.3

Significance tests t-tests of Keymen *vs* (Relayers plus Endmen) are significant both in the All-Channel groups ($t = 3.0$, $p < .01$) and in the Circle and Circle-AC, Unorganized groups ($t = 5.3$, $p < .001$).

* Number of persons occupying each role is given in Table 1.

endmen. These differences are not calculational artifacts; the raw scores place the "average" keyman (average = 138.5) at the 89th percentile, with the relayers and endmen (average = 124.4) at the 74th percentile on national, four-year college norms.[8] In the Circle and Circle-AC groups which organized, the keymen and relayers are associated in intellectual level, being superior to the endmen at the 10% level ($t = 1.7$), not as sharply as the keymen are superior to the relayers and endmen in the All-Channel groups. Thus, role differentiation is associated with intellectual ability.

90% of our subjects; the remaining 10% were tested by the experimenters in a special session before they were assembled with the others into the groups.

[8] Percentiles based on Table 5, data for men in 94 four-year colleges. *Norms Bulletin American Council in Education Psychological Examination for College Freshmen,* 1949 Edition, Educational Testing Service, Princeton, N.J.

Can these contrasting results, in which relayers and endmen are similar in the All-Channel groups while keymen and relayers are associated in the organized Circle and Circle-AC groups, be related to our earlier findings with regard to accuracy of organizational perceptions and amount of planning activity? Both keymen and relayers in the Circle and Circle-AC groups who finally were successful in organizing themselves were shown to have been more adequate in their perceptions of the organization, as they differentiated their roles. Gaining such superior perception of the organizational structure was not difficult in the All-Channel groups, as there were no communication restrictions. Superior intelligence was not necessary in the All-Channel groups for perceptual accuracy.

Further, consider the strong association between ACE scores and success in designating one's self as keyman in the All-Channel groups. This state of affairs is reflected also, in a diluted way, in the superior ability of the keymen in the unorganized Circle and Circle-AC groups. Thus, it would seem that superior intellectual ability is a prerequisite to the establishment of oneself in both keyman and relayer roles in the more restricted Circle and Circle-AC groups.

These interpretations would be less tenuous had the data revealed a clear relationship between intelligence and accuracy in perception of organizational structure and planning the specific role establishment. Then one might argue that intelligence expresses itself in superior organizing activity. But the product-moment correlations between ACE scores and the accuracy measure ($r = .03$) and the volume of specific planning ($r = .06$) are nearly zero. This would seem, then, to mean that although intelligence may be a necessary prerequisite for role differentiation, its presence does not insure the effective occupancy of roles and their intermeshing into a social system. This latter interpretation is further supported by the fact that although all groups were equated in intelligence, 66% of the Circle and Circle-AC groups failed to organize by interlocking their roles.

Role Differentiation Because of Personal Ascendance

If intellectual ability is a limiting rather than an enhancing factor, what personal characteristics might be responsible for inducing the heightened activity in organizational development? The important part self-designation played in role establishment for the keymen suggests that social ascendance might be a fruitful variable to explore. The Guilford-Zimmerman "A" scale was administered to participants in the second "run" before they developed their groups. When a table analogous

to the one made for ACE scores is constructed for these self-rated questionnaires (Table 10), the keymen are seen to be clearly more ascendant than the relayers and endmen.

Note the relation between ACE scores for the organized Circle and Circle-AC groups and the importance of ascendance. It would seem that although superior intelligence is needed for both keymen and relayers, higher amounts of personal ascendance distinguish the keymen from the relayers. Personal ascendance predicts the occurrence of self-nomination as keyman.

The fact that identical findings were obtained for both organized and unorganized Circle and Circle-AC groups indicates that ascendance was *not* associated with the interlocking of roles into organizational structures. This contrasts with the parts played by perceptual accuracy,

TABLE 10

PERSONAL ASCENDANCE OF SUBJECTS BY ROLES *
(RAW SUMS ON G-Z A SCALE) †

Role	Circle and Circle-AC, Organized		Circle and Circle-AC, Unorganized	
	Mean	Standard deviation	Mean	Standard deviation
Keymen	5.9 (n = 11)	2.1	6.0 (n = 13)	2.0
Relayers	4.2 (n = 20)	2.0	4.8 (n = 24)	1.5
Endmen	4.6 (n = 19)	1.2	4.9 (n = 23)	1.4

Significance tests: t-tests of Keymen *vs.* (Relayers plus Endmen) are significant both in the Organized (t = 2.4, $p < .05$) and in the Unorganized (t = 2.2, $p < .05$) Circle and Circle-AC groups

* Number of persons occupying each role is given in parentheses under each mean.

† Ascendance scores are not available for either the All-Channel or Wheel groups, as the bulk of the All-Channel groups and all the Wheel groups were completed during the first experimental run, see footnote 3 in (5) for further details.

planning, and intellectual ability—all three of which were integrally involved in the development of structure as well as in the distribution of occupants in differentiated roles.

Summary. Only two variables were available for the analysis of the relation of personal characteristics to the development of roles. Intellectual ability seems to be a necessary, but not sufficient, factor. Ascendance, on the other hand, seems necessary for the distribution of persons among the differentiated roles but does not determine whether groups with differentiated roles will develop interlocked structures of their roles.

Discussion

Planning of the Organization vs. Interlocking Roles

In the previous macro-analysis of these data it was concluded (5, 186–187): "although some explicit understanding of the net and of the evolution of the organization is necessary, understanding *per se* is not sufficient to induce the development of continuing, differentiated organizations." An analogous state of affairs seems to prevail with respect to the existence of roles: although differentiation of roles is imperative for articulation, such differentiation is not sufficient in itself to induce an interlocking of the roles. Murray puts it vividly (9, 451), "It is not so much that a man is obliged (expected) to do certain things, but that he is obliged (in order to integrate his actions with others) to do them at a fixed time."

In the earlier report considerable support was adduced for the conclusion that communication restriction operates by reducing the planning (5, 194–195). The results of the present role analysis indicate that in this experimental situation planning is deficient, not in securing behavioral differentiation of the functional roles, but in its failure to plan the interlocking of the performed roles.

In the previous paper it was hypothesized (5, Table 4) that the sending of specific proposals for organizing the groups was a necessary condition for induction of organization. This analysis indicates that those specific proposals were related integrally to achievement of an interlocking of already differentiated roles. Thus, it is now less difficult to understand why only the specific planning messages rather than the more general ones were found in the macro-analysis to be crucial (5, Table 4). Participants cannot articulate roles by exchanging notes about general organizational plans. To interlock particular roles, it seems, one must get specific.

The discrepancy noted in Tables 4 and 5 dramatically supports an interpretation that the participants must have highly specific knowledge of each other's roles in planning. The unorganized Circle and Circle-AC groups at the end of the experiment (Table 5) only minimally understood the roles which were being played—even though they devoted almost as many of their intertrial messages to such activity (Table 4). Those individuals who had a more accurate (averaging approximately 53%) knowledge of the roles were able to interlock their roles much more adequately than those without such detailed knowledge (averaging approximately 12%).

Examination of the accuracy averages presented in Table 5 suggests that the knowledge needed for interlocking the roles is relatively wide-

spread throughout the group, as would necessarily be the case if the hypothesis that roles are systems of reciprocated interactions is valid. The equal need for knowledge about the other individuals' roles is vividly exhibited in the startling equality of role perceptions among all participants, regardless of their performed role, in the All-Channel groups. The modification that certain minimal amounts of such knowledge can make is indicated in the gradient of knowledge exhibited among persons in different functional roles. In Table 5, for the Circle and Circle-AC groups which organized, the endmen seem to be able to articulate themselves into the organization, even though they possess but half (37%) of the knowledge possessed by the keyman (68%). Note, however, that the 37% is twice that possessed by the persons (i.e., relayers) with the greatest amount of knowledge (18%) in the unorganized Circle and Circle-AC groups.

The ease with which various roles are perceived may be calculated from the accuracy scores used originally for Table 5 by re-averaging the accuracies with which particular roles are perceived *by* all the members of the group. These new calculations are presented in Table 11. The key-

TABLE 11

ACCURACY WITH WHICH PARTICULAR ROLES ARE PERCEIVED *
(CORRECT MINUS INCORRECT ROLE IDENTIFICATIONS OVER TOTAL ROLES PRESENT)

Perceived Role	All-Channel		Circle and Circle-AC, Organized		Circle and Circle-AC, Unorganized	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Keymen	.71	.31	.68	.28	.04	.29
Relayers	.48	.50	.43	.30	.07	.30
Endmen	.35	.44	.45	.31	.03	.39

Significance tests:

	All-Channel	*Circle and Circle-AC, Organized*
Keymen *vs.* Relayers	$t = 2.7, p < .05$	$t = 3.0, p < .02$
Keymen *vs.* (Relayers + Endmen)	$t = 6.2, p < .001$	$t = 2.8, p < .02$

* The number of perceptions made of each role is the number of persons in each role, as given above (Table 1), multiplied by five (as each person in the group had opportunity to observe each role, including the instance when the role was his own).

men are more easily visible in the All-Channel and in the organized Circle and Circle-AC groups than are the relayers or endmen.

The figures used to generate Table 11 also yield the accuracy with which one perceives one's own role as contrasted with the accuracy with which one perceives the roles being played by the others. The average overall accuracy with which each participant described his own role was

45%. This compares with an accuracy of 29% for these same participants in perceiving the roles of others, a statistically significant difference ($t = 3.9$, $p < .001$). Thus, not only do roles have varying visibility, but in this experimental situation persons see their own roles with more accuracy than they perceive the roles of others.

That self-perceptions are the result of interactions has been posited by Cooley, James, and Mead (10, 316–318). By noting the different accuracies of participants in the three communication situations, we have empirical evidence to support this long held proposition. In the All-Channel groups, the participants had no communication restrictions imposed by the net within which they operated; in this situation the group members perceived their own roles with an accuracy of 59%. In the organized Circle and Circle-AC groups, despite the net imposed restriction, the members had worked out relatively stable communication patterns at the end of the experiment; their accuracy of self-perception was 51%. In the unorganized Circle and Circle-AC groups, however, where adequate communications were never developed, the accuracy of self-perceptions was but 29%. The difference between the organized and unorganized Circle and Circle-AC groups is statistically significant ($t = 2.0$; $p < .05$). These findings about role self-perception are analogous to those obtained for group opinion by Travers (12), who presents evidence that group members estimate group opinion more accurately with more interaction.

Position Consensus vs. Organization Integration

This experiment generated evidence on the relation of perception to behavior in a way impossible when one is restricted to an interview or questionnaire. For example, members of the Survey Research Center at The University of Michigan have studied whether "the degree of integration existing within an organization at any time stems in part from the degree of consensus or sharing of expectations about the behavior of people who occupy various positions" (7, 20). But, using a verbal survey methodology, they necessarily limited their definition of "integration" to personal judgments by role-occupiers of such variables as felt conflict, feelings of "easy relations," and satisfaction with participation. In this study it was possible to relate consensus to two objective measures of "integration," namely organizational complexity and organizational efficiency.

The test of the relation of consensus to organizational complexity is contained in Table 5. We may use our accuracy measure (Table 5) as an index of the extent to which role expectations were shared, for at least to the extent the participants agreed with the experimenter, to that ex-

tent they share their expectations about the roles. If we measure organizational complexity by the extent to which the Circle and Circle-AC groups were organized, we find that the "integrated" groups (i.e., the "organized" groups) have some four times as much consensus ("accuracy") as did the less "integrated" groups (i.e., the "unorganized" groups).

By correlating the efficiency with which each of 68 groups performed its task (average time on three fastest trials) with the overall accuracy of the members of the groups in perceiving their roles, it is established ($r = -.73$) that consensus relates to integration, when one measures integration through an objective performance index, too.

It is assuring to find that both methodologies lead to the same conclusion, namely, that greater consensus about position is associated with greater degrees of organization integration, defined subjectively or objectively.

As this discussion intimates, the term "integration" is ambiguous. The three subjective meanings ("felt conflict," "easy relations," and "participation satisfaction") and the two objective meanings ("organizational complexity" and "performance efficiency") suggest that much further work will be needed to delineate useful definitions of integration, so that the scope of the proposition relating consensus to integration may be specified more adequately.

Conclusions

This experimental study of the differentiation of roles in task-oriented groups allowed the separation of processes involved in role formation from those involved in interlocking roles into organizational structures. In both phases, the establishment of role systems was related to external and internal factors operating on the group. Within the internal processes, it was possible to distinguish further those factors which operated to allow role formation as well as those which induced interlocking roles into organizational structures.

The study tapped only a few of the totality of the mechanisms involved. The findings may, however, be summarized as hypotheses about the processes which were uncovered:

1. In task-oriented groups which begin their existence with no *a priori* roles, the development of performed roles does not necessarily provide the group with the ability to interlock these roles into organizational structures.
2. The possibility of an interlocked role system is increased:
   a. when the activities comprising the tasks can be assembled into functional positions,
   b. when the perception of the role differentiation processes by the members is more explicit,

c. when there is planning of a more specific nature,

d. and when greater intellectual ability is available in the group.

3. The establishment of individuals in leadership-followership roles is related to the same intra-group factors as those related to the establishment of the organizational structure (2b, 2c, and 2d), with the addition that persons characterized by personal ascendance tend to occupy leadership roles.

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Structural Balance: A Generalization of Heider's Theory

Dorwin Cartwright and Frank Harary

A persistent problem of psychology has been how to deal conceptually with patterns of interdependent properties. This problem has been central, of course, in the theoretical treatment by Gestalt psychologists of phenomenal or neural *configurations* or *fields* (12, 13, 15). It has also been of concern to social psychologists and sociologists who attempt to employ concepts referring to social *systems* (18).

Heider (9), reflecting the general field-theoretical approach, has considered certain aspects of cognitive fields which contain perceived people and impersonal objects or events. His analysis focuses upon what he calls the *P-O-X* unit of a cognitive field, consisting of *P* (one person), *O* (another person), and *X* (an impersonal entity). Each relation among the parts of the unit is conceived as interdependent with each other relation. Thus, for example, if *P* has a relation of affection for *O* and if *O* is seen as responsible for *X*, then there will be a tendency for *P* to like or approve of *X*. If the nature of *X* is such that it would "normally" be evaluated as bad, the whole *P-O-X* unit is placed in a state of imbalance, and pressures will arise to change it toward a state of balance. These pressures may work to change the relation of affection between *P* and *O*, the relation of responsibility between *O* and *X*, or the relation of evaluation between *P* and *X*.

The purpose of this paper is to present and develop the consequences of a formal definition of balance which is consistent with Heider's conception and which may be employed in a more general treatment of empirical configurations. The definition is stated in terms of the mathematical theory of linear graphs (8, 14) and makes use of a distinction between a given relation and its opposite relation. Some of the ramifica-

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tions of this definition are then examined by means of theorems derivable from the definition and from graph theory.

Heider's Conception of Balance

In developing his analysis of balanced cognitive units, Heider distinguishes between two major *types* of relations. The first concerns attitudes, or the relation of liking or evaluating. It is represented symbolically as L when positive and as ~L when negative. Thus, *P*L*O* means *P* likes, loves, values, or approves *O*, and *P*~L*O* means *P* dislikes, negatively values, or disapproves *O*. The second type of relation refers to cognitive unit formation, that is, to such specific relations as similarity, possession, causality, proximity, or belonging. It is written as U or ~U. Thus, according to Heider, *P*U*X* means that *P* owns, made, is close to, or is associated with *X*, and *P*~U*X* means that *P* does not own, did not make, or is not associated with *X*.

A *balanced state* is then defined in terms of certain combinations of these relations. The definition is stated separately for two and for three entities.

> In the case of two entities, a balanced state exists if the relation between them is positive (or negative) in all respects, i.e., in regard to all meanings of L and U. . . . In the case of three entities, a balanced state exists if all three relations are positive in all respects, or if two are negative and one positive (9, 110).

These are examples of balanced states: *P* likes something he made (*P*U*X*, *P*L*X*) ; *P* likes what his friend likes (*P*L*O*, *O*L*X*, *P*L*X*) ; *P* dislikes what his friend dislikes (*P*L*O*, *O*~L*X*, *P*~L*X*) ; *P* likes what his enemy dislikes (*P*~L*O*, *O*~L*X*, *P*L*X*) ; and *P*'s son likes what *P* likes (*P*U*O*, *P*L*X*, *O*L*X*).

Heider's basic hypothesis asserts that there is a tendency for cognitive units to achieve a balanced state. Pressures toward balance may produce various effects.

> If no balanced state exists, then forces towards this state will arise. Either the dynamic characters will change, or the unit relations will be changed through action or through cognitive reorganization. If a change is not possible, the state of imbalance will produce tension (9, 107–109).

The theory, stated here in sketchy outline, has been elaborated by Heider so as to treat a fuller richness of cognitive experience than would be suggested by our brief description. It has been used, too, by a number of others, as a point of departure for further theoretical and empirical work. We shall summarize briefly some of the major results of this work.

Horowitz, Lyons, and Perlmutter (10) attempted to demonstrate tendencies toward balance in an experiment employing members of a discus-

sion group as subjects. At the end of a discussion period each subject was asked to indicate his evaluation of an event (*P*L*X* or *P*~L*X*) which had occurred during the course of the discussion. The event selected for evaluation was one which would be clearly seen as having been produced by a single person (*O*U*X*). The liking relation between each *P* and *O* (*P*L*O* or *P*~L*O*) had been determined by a sociometric questionnaire administered before the meeting. Would *P*'s evaluation of the event be such as to produce a balanced *P-O-X* unit? If so, *P*'s evaluation of *O* and *X* should be of the same sign. The experimental data tend to support the hypothesis that a *P-O-X* unit tends toward a balanced state.[1]

The social situation of a discussion group can be better analyzed, according to Horowitz, Lyons, and Perlmutter, by considering a somewhat more complex cognitive unit. The evaluation of *X* made by *P*, they argue, will be determined not only by *P*'s evaluation of *O* but also by his perception of the evaluation of *X* given by others (*Q*s) in the group. The basic unit of such a social situation, then, consists of the subject, a person who is responsible for the event, and another person who will be seen by the subject as supporting or rejecting the event. This is called a *P-O-Q-X* unit. The additional data needed to describe these relations were obtained from the sociometric questionnaire which indicated *P*'s evaluation of *Q* (*P*L*Q* or *P*~L*Q*), and from a question designed to reveal *P*'s perception of *Q*'s support or rejection of *X*, treated by the authors as a unit relation (*Q*U*X* or *Q*~U*X*).[2]

Although these authors indicate the possibility of treating the *P-O-Q-X* unit in terms of balance, they do not develop a formal definition of a balanced configuration consisting of four elements. They seem to imply that the *P-O-Q-X* unit will be balanced if the *P-O-X* and the *P-Q-X* units are both balanced. They do not consider the relation between *Q* and *O*, nor the logically possible components of which it could be a part. Their analysis is concerned primarily with the two triangles (*P-O-X* and *P-Q-X*), which are interdependent, since both contain the relation of *P*'s liking of *X*. We noted above that the data tend to support the hypothesis that the *P-O-X* unit will tend toward balance. The data even more strongly support the hypothesis when applied to the *P-Q-X* unit; *P*'s evaluation of *X* and his perception of *Q*'s attitude toward *X* tend to agree

[1] One of the attractive features of this study is that it was conducted in a natural "field" setting, thus avoiding the dangers of artificiality. At the same time the setting placed certain restrictions on the possibility of manipulation and control of the variables. The data show a clear tendency for *P* to place a higher evaluation on *X*s produced by more attractive *O*'s. It is not clearly demonstrated that *P* likes *X*s produced by liked *O*'s and dislikes *X*s produced by disliked *O*'s.

[2] Whether this relation should be treated as U or L is subject to debate. For testing Heider's theory of balance, however, the issue is irrelevant, since he holds that the two relations are interchangeable in defining balance.

when *P* likes *Q*, and to disagree when *P* dislikes *Q*. It should be noted, however, that there was also a clear tendency for *P* to see *Q*'s evaluation of *X* as agreeing with his own whether or not he likes *Q*.

In a rather different approach to the question of balanced *P-O-X* units, Jordan (11) presented subjects with 64 different hypothetical situations in which the L and U relations between each pair of elements was systematically varied. The subject was asked to place himself in each situation by taking the part of *P*, and to indicate on a scale the degree of pleasantness or unpleasantness he experienced. Unpleasantness was assumed to reflect the postulated tension produced by imbalanced units. Jordan's data tend to support Heider's hypothesis that imbalanced units produce a state of tension, but he too found that additional factors need to be considered. He discovered, for example, that negative relations were experienced as unpleasant even when contained in balanced units. This unpleasantness was particularly acute when *P* was a part of the negative relation. Jordan's study permits a detailed analysis of these additional influences, which we shall not consider here.

Newcomb (17), in his recent theory of interpersonal communication, has employed concepts rather similar to those of Heider. He conceives of the simplest communicative act as one in which one person *A* gives information to another person *B* about something *X*. The similarity of this *A-B-X* model to Heider's *P-O-X* unit, together with its applicability to objective interpersonal relations (rather than only to the cognitive structure of a single person), may be seen in the following quotations from Newcomb:

> *A-B-X* is . . . regarded as constituting a system. That is, certain definable relationships between *A* and *B*, between *A* and *X*, and between *B* and *X* are all viewed as interdependent. . . . For some purposes the system may be regarded as a phenomenal one within the life space of *A* or *B*, for other purposes as an "objective" system including all the possible relationships as inferred from observations of *A*'s and *B*'s behavior (17, 393).

Newcomb then develops the concept of "strain toward symmetry," which appears to be a special instance of Heider's more general notion of "tendency toward balance." "Strain toward symmetry" is reflected in several manifestations of a tendency for *A* and *B* to have attitudes of the same sign toward a common *X*. Communication is the most common and usually the most effective manifestation of this tendency.

By use of this conception Newcomb reinterprets several studies (1, 4, 5, 16, 20) which have investigated the interrelations among interpersonal attraction, tendencies to communicate, pressures to uniformity of opinion among members of a group, and tendencies to reject deviates. The essential hypothesis in this analysis is stated thus:

If *A* is free either to continue or not to continue his association with *B*, one or the other of two eventual outcomes is likely: (*a*) he achieves an equilibrium characterized by relatively great attraction toward *B* and by relatively high perceived symmetry, and the association is continued; or (*b*) he achieves an equilibrium characterized by relatively little attraction toward *B* and by relatively low perceived symmetry, and the association is discontinued (17, 402).

Newcomb's outcome *a* is clearly a balanced state as defined by Heider. Outcome *b* cannot be unambiguously translated into Heider's terms. If by "relatively little attraction toward *B*" is meant a negative L relation between *A* and *B*, then this outcome would also seem to be balanced. Newcomb's "continuation or discontinuation of the association between *A* and *B*" appear to correspond to Heider's U and ~U relations.

Statement of the Problem

This work indicates that the tendency toward balance is a significant determinant of cognitive organization, and that it may also be important in interpersonal relations. The concept of balance, however, has been defined so as to apply to a rather limited range of situations, and it has contained certain ambiguities. We note five specific problems.

1. *Unsymmetric relations.* Should all relations be conceived as symmetric? The answer is clearly that they should not; it is possible for *P* to like *O* while *O* dislikes *P*. In fact, Tagiuri, Blake, and Bruner (21) have intensively studied dyadic relations to discover conditions producing symmetric relations of actual and perceived liking. Theoretical discussions of balance have sometimes recognized this possibility—Heider, for example, states that unsymmetric liking is unbalanced—but there has been no general definition of balance which covers unsymmetric relations. The empirical studies of balance have assumed that the relations are symmetric.

2. *Units containing more than three entities.* Nearly all theorizing about balance has referred to units of three entities. While Horowitz, Lyons, and Perlmutter studied units with four entities, they did not *define* balance for such cases. It would seem desirable to be able to speak of the balance of even larger units.

3. *Negative relations.* Is the negative relation the *complement* of the relation or its *opposite?* All of the discussions of balance seem to equate these, but they seem to us to be quite different, for the complement of a relation is expressed by adding the word "not" while the opposite is indicated by the prefix "dis" or its equivalent. Thus, the complement of "liking" is "not liking"; the opposite of "liking" is "disliking." In general, it appears that ~L has been taken to mean "dislike" (the opposite

relation) while ~U has been used to indicate "not associated with" (the complementary relation). Thus, for example, Jordan says: "Specifically, '+L' symbolizes a positive attiude, '−L' symbolizes a negative attitude, '+U' symbolizes the existence of unit formation, and '−U' symbolizes the lack of unit formation" (11, 274).

4. *Relations of different types.* Heider has made a distinction between two types of relations—one based upon liking and one upon unit formation. The various papers following up Heider's work have continued to use this distinction. And it seems reasonable to assume that still other types of relations might be designated. How can a definition of balance take into account relations of different types? Heider has suggested some of the ways in which liking and unit relations may be combined, but a general formulation has yet to be developed.

5. *Cognitive fields and social systems.* Heider's intention is to describe balance of cognitive units in which the entities and relations enter as experienced by a single individual. Newcomb attempts to treat social systems which may be described objectively. In principle, it should be possible also to study the balance of sociometric structures, communication networks, patterns of power, and other aspects of social systems.

We shall attempt to define balance so as to overcome these limitations. Specifically, the definition should (*a*) encompass unsymmetric relations, (*b*) hold for units consisting of any finite number of entities, (*c*) preserve the distinction between the *complement* and the *opposite* of a relation, (*d*) apply to relations of different types, and (*e*) serve to characterize cognitive units, social systems, or any configuration where both a relation and its opposite must be specified.

The Concepts of Graph, Digraph, and Signed Graph

Our approach to this problem has two primary antecedents: (*a*) Lewin's treatment (15) of the concepts of whole, differentiation, and unity, together with Bavelas' extension (2) of this work to group structure; and (*b*) the mathematical theory of linear graphs.

Many of the graph-theoretic definitions given in this section are contained in the classical reference on graph theory, König (14), as well as in Harary and Norman (8). We shall discuss, however, those concepts which lead up to the theory of balance.

A *linear graph*, or briefly a *graph*, consists of a finite collection of *points*[3] *A, B, C, . . .* together with a prescribed subset of the set of all unordered pairs of distinct points. Each of these unordered pairs, *AB*, is a *line* of the graph. (From the viewpoint of the theory of binary rela-

[3] Points are often called "vertices" by mathematicians and "nodes" by electrical engineers.

tions,[4] a graph corresponds to an irreflexive[5] symmetric relation on points *A, B, C,* . . . . Alternatively a graph may be represented as a matrix.[6])

Figure 1 depicts a graph of four points and four lines. The points might represent people, and the lines some relationship such as mutual liking. With this interpretation, Fig. 1 indicates that mutual liking exists between those pairs of people *A, B, C,* and *D* joined by lines. Thus *D* is in the relation with all other persons, while *C* is in the relation only with *D*. Figure 1 could be used, of course, to represent many other kinds of relationships between many other kinds of entities.

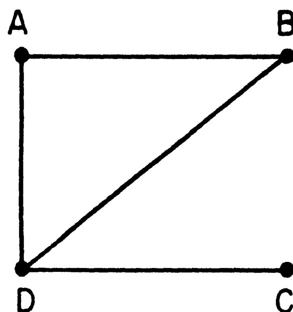


FIG. 1. A linear graph of four points and four lines. The presence of the line AB indicates the existence of a specified symmetric relationship between the two entities A and B.

It is apparent from this definition of graph that relations are treated in an all-or-none manner, i.e., either a relation exists between a given pair of points or it does not. Obviously, however, many relationships of interest to psychologists (liking, for example) exist in varying degrees. This fact means that our present use of graph theory can treat only the structural, and not the numerical, aspects of relations. While our treatment is thereby an incomplete representation of the strength of relations, we believe that conceptualization of the structural properties of relations is a necessary first step toward a more adequate treatment of the more complex situations. Such an elaboration, however, goes beyond the scope of this paper.

A *directed graph,* or a *digraph,* consists of a finite collection of points together with a prescribed subset of the set of all ordered pairs of distinct points. Each of these ordered pairs *AB* is called a *line* of the digraph. Note that the only difference between the definitions of graph and digraph is that the lines of a graph are unordered pairs of points while

[4] This is the approach used by Heider.

[5] A relation is irreflexive if it contains no ordered pairs of the form (a, a), i.e., if no element is in this relation to itself.

[6] This treatment is discussed in Festinger (3). The logical equivalence of relations, graphs, and matrices is taken up in Harary and Norman (8).

the lines of a digraph are ordered pairs of points. An *ordered pair* of points is distinguished from an unordered pair by designating one of the points as the first point and the other as the second. Thus, for example, the fact that a message can go *from A to B* is represented by the ordered pair (A, B), or equivalently, by the line $\overrightarrow{AB}$, as in Fig. 2. Similarly, the fact that A and D choose each other is represented by the two directed lines $\overrightarrow{AD}$ and $\overrightarrow{DA}$.

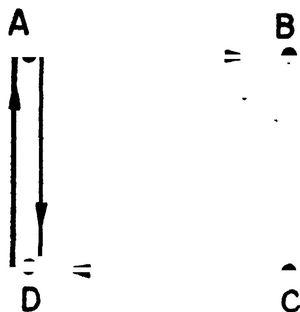


FIG. 2. A directed graph of four points and five directed lines. An $\overrightarrow{AB}$ line indicates the existence of a specified ordered relationship involving the two entities A and B. Thus, for example, if A and B are two people, the $\overrightarrow{AB}$ line might indicate that a message can go from A to B or that A chooses B.

A *signed graph,* or briefly an *s-graph,* is obtained from a graph when one regards some of the lines as positive and the remaining lines as negative. Considered as a geometric representation of binary relations, an s-graph serves to depict situations or structures in which both a relation and its opposite may occur, e.g., like and dislike. Figure 3 depicts an s-graph, employing the convention that solid lines are positive and dashed lines negative; thus A and B are represented as liking each other while A and C dislike each other.

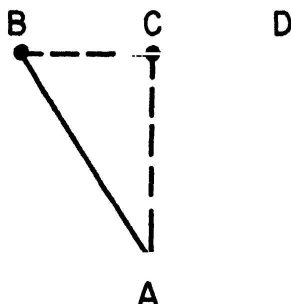


FIG. 3. A signed graph of four points and five lines. Solid lines have a positive sign and dashed lines a negative sign. If the points stand for people and the lines indicate the existence of a liking relationship, this s-graph shows that A and B have a relationship of liking, A and C have one of disliking, and B and D have a relationship of indifference (neither liking or disliking).

Combining the concepts of digraph and s-graph, we obtain that of an s-digraph. A *signed digraph,* or an *s-digraph,* is obtained from a digraph by taking some of its lines as positive and the rest as negative.

A *graph of type 2* (8), introduced to depict structures in which two different relations defined on the same set of elements occur, is obtained from a graph by regarding its lines as being of two different colors (say), and by permitting the same pair of points to be joined by two lines if these lines have different colors. A *graph of type* τ, $\tau = 1, 2, 3, \ldots$, is defined similarly. In an s-graph or s-digraph of type 2, there may occur lines of two different types in which a line of either color may be positive or negative. An example of an s-graph of type 2 might be one depicting for the same *P-O-X* unit both U and L relations among the entities, where the sign of these relations is indicated.

A *path* is a collection of lines of a graph of the form $AB, BC, \ldots, DE$, where the points $A, B, C, \ldots, D, E$, are distinct. A *cycle* consists of the above path together with the line EA. The *length* of a cycle (or path) is the number of lines in it; an *n-cycle* is a cycle of length n. Analogously to graphs, a *path of a digraph* consists of directed lines of the form $\overrightarrow{AB}$, $\overrightarrow{BC}, \ldots, \overrightarrow{DE}$, where the points are distinct. A *cycle* consists of this path together with the line $\overrightarrow{EA}$. In the later discussion of balance of an s-digraph we shall use the concept of a semicycle. A *semicycle* is a collection of lines obtained by taking exactly one from each pair $\overrightarrow{AB}$ or $\overrightarrow{BA}$, $\overrightarrow{BC}$ or $\overrightarrow{CB}, \ldots, \overrightarrow{DE}$ or $\overrightarrow{ED}$, and $\overrightarrow{EA}$ or $\overrightarrow{AE}$. We illustrate semicycles with the digraph of Fig. 2. There are three semicycles in this digraph: $\overrightarrow{AD}, \overrightarrow{DA}$; $\overrightarrow{AD}, \overrightarrow{DB}, \overleftarrow{BA}$; and $\overrightarrow{AD}, \overleftarrow{DB}, \overleftarrow{BA}$. The last two of these semicycles are not cycles. Note that every cycle is a semicycle, and a semicycle of length 2 is necessarily a cycle.

Balance

With these concepts of graphs, digraphs, and signed graphs we may now develop a rigorous generalization of Heider's concept of balance.

It should be evident that Heider's terms, *entity, relation,* and *sign of a relation* may be coordinated to the graphic terms, *point, directed line,* and *sign of a directed line.* Thus, for example, the assertion that P likes O (PLO) may be depicted as a directed line of positive sign $\overrightarrow{PO}$. It should also be clear that Heider's two different kinds of relations (L and U) may be treated as lines of different type. It follows that a graphic representation of a *P-O-X* unit having positive or negative L and U relations will be an s-digraph of type 2.

For simplicity of discussion we first consider the situation containing only symmetric relations of a single type (i.e., an s-graph of type 1). Figure 4 shows four such s-graphs. It will be noted that each of these

s-graphs contains one cycle: *AB, BC, CA*. We now need to define the sign of a cycle. The *sign of a cycle* is the product of the signs of its lines. For convenience we denote the sign of a line by +1 or −1 when it is positive or negative. With this definition we see that the cycle, *AB, BC, CA* is positive in s-graph *a* (+1 · +1 · +1), positive in s-graph *b* (+1 · −1 · −1), negative in s-graph *c* (+1 · +1 · −1), and negative in s-graph *d* (−1 · −1 · −1). To generalize, a *cycle is positive* if it contains an even number of negative lines, and it is *negative* otherwise. Thus, in particular, a cycle containing only positive lines is positive, since the number of negative lines is zero, an even number.

In discussing the concept of balance, Heider states (see 9, 110) that when there are three entities a balanced state exists if all three relations are positive or if two are negative and one positive. According to this definition, s-graphs *a* and *b* are balanced while s-graphs *c* and *d* are not (Fig. 4). We note that in the examples cited Heider's balanced state is depicted as an s-graph of three points whose cycle is positive.

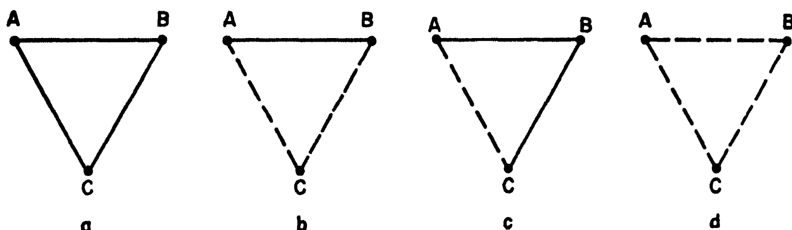


FIG. 4. Four *s*-graphs of three points and three lines each. Structures *a* and *b* are balanced, but *c* and *d* are not balanced.

In generalizing Heider's concept of balance, we propose to employ this characteristic of balanced states as a general criterion for balance of structures with any number of entities. Thus we define an *s-graph* (containing any number of points) as *balanced* if all of its cycles are positive.

Figure 5 illustrates this definition for four s-graphs containing four

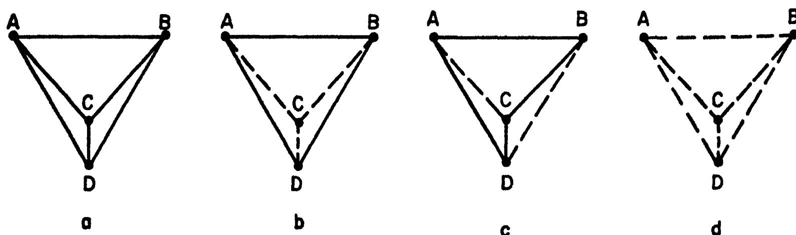


FIG. 5. Four *s*-graphs containing four points and six lines each. Structures *a* and *b* are balanced, but *c* and *d* are not balanced.

points. In each of these s-graphs there are seven cycles: *AB, BC, CA; AB, BD, DA; BC, CD, DB; AC, CD, DA; AB, BC, CD, DA; AB, BD, DC, CA;* and *BC, CA, AD, DB.* It will be seen that in s-graphs *a* and *b* all seven cycles are positive, and these s-graphs are therefore balanced. In s-graphs *c* and *d* the cycle, *AB, BC, CA,* is negative (as are several others), and these s-graphs are therefore not balanced. It is obvious that this definition of balance is applicable to structures containing any number of entities.[7]

The extension of this definition of balance to s-digraphs containing any number of points is straightforward. Employing the same definition of *sign of a semicycle* for an s-digraph as for an ordinary s-graph, we similarly define an s-digraph as balanced if all of its semicycles are positive.

Consider now Heider's *P-O-X* unit, containing two persons *P* and *O* and an impersonal entity *X*, in which we are concerned only with liking relations. Figure 6 shows three of the possible 3-point s-digraphs which may represent such *P-O-X* units. A positive $\overrightarrow{PO}$ line means that *P* likes *O*, a negative $\overrightarrow{PO}$ line means that *P* dislikes *O*. We assume that a person can like or dislike an impersonal entity but that an impersonal entity can neither like nor dislike a person.[8] We also rule out of consideration here "ambivalence," where a person may simultaneously like and dislike another person or impersonal entity.

In each of these s-digraphs there are three semicycles: $\overrightarrow{PO}, \overrightarrow{OP}; \overrightarrow{PO}, \overrightarrow{OX}, \overleftarrow{XP}$; and $\overleftarrow{PO}, \overrightarrow{OX}, \overleftarrow{XP}$. If we confine our discussion to the kind of structures represented in Fig. 6 (i.e., where there is no ambivalence and where

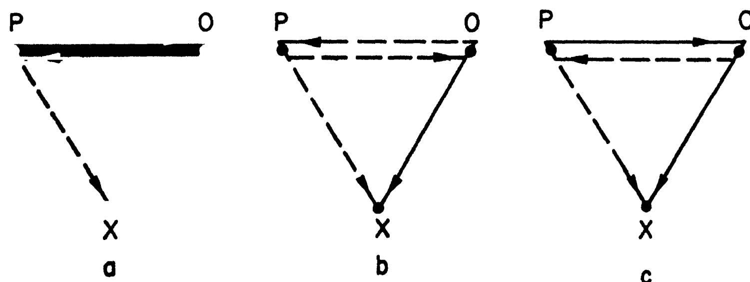


FIG. 6. Three s-digraphs representing Heider's P-O-X units. Only structure *b* is balanced.

[7] If an s-graph contains no cycles, we say that it is "vacuously" balanced, since all (in this case, none) of its cycles are positive.

[8] In terms of digraph theory we define an *object* as a *point with zero output.* Thus a completely indifferent person is an object. If, psychologically, an impersonal entity is active and likes or dislikes a person or another impersonal entity, then in terms of digraph theory it is not an object.

all possible positive or negative lines are present), it will be apparent that: when *P* and *O* like each other, the s-digraph is balanced only if both persons either like or dislike *X* (s-digraph *a* is not balanced); when *P* and *O* dislike each other, the s-digraph is balanced only if one person likes *X* and the other person dislikes *X* (s-digraph *b* is balanced); and when one person likes the other but the other dislikes him, the s-digraph must be not balanced (s-digraph *c* is not balanced). These conclusions are consistent with Heider's discussion of *P-O-X* units and with Newcomb's treatment of the *A-B-X* model.

The furher extension of the notion of balance to s-graphs of type 2 remains to be made. The simplest procedure would be simply to ignore the types of lines involved. Then we would again define an *s-graph of type 2* to be *balanced* if all of its cycles are positive. This definition appears to be consistent with Heider's intention, at least as it applies to a situation containing only two entities. For in speaking of such situations having both L and U relations, he calls them balanced if both relations between the same pair of entities are of the same sign (see 9, 110). There remains some question as to whether this definition will fit empirical findings for cycles of greater length. Until further evidence is available, we advance the above formulation as a tentative definition. Obviously the definition of balance can be given for s-graphs of general type τ in the same way.

Some Theorems on Balance

By definition, an s-graph is balanced if and only if each of its cycles is positive. In a given situation represented by an s-graph, however, it may be impractical to single out each cycle, determine its sign, and then declare that it is balanced only after the positivity of every cycle has been checked. Thus the problem arises of deriving a criterion for determining whether or not a given graph is balanced without having to revert to the definition. This problem is the subject matter of a separate paper (6), in which two necessary and sufficient conditions for an s-graph to be balanced are developed. The first of these is no more useful than the definition in determining by inspection whether an s-graph is balanced, but it does give further insight into the notion of balance. Since the proofs of these theorems may be found in the other paper, we shall not repeat them here.

Theorem. An s-graph is balanced if and only if all paths joining the same pair of points have the same sign.

Thus, we can ascertain that the s-graph of Fig. 7 is balanced either by listing each cycle separately and verifying that it is positive, or, using this theorem, by considering each pair of possible points and verifying that

all possible paths joining them have the same sign. For example, all the paths between points *A* and *E* are negative, all paths joining *A* and *C* are positive, etc.

The following structure theorem has the advantage that it is useful in determining whether or not a given s-graph is balanced without an exhaustive check of the sign of every cycle, or of the signs of all paths joining every pair of points.

Structure theorem. An s-graph is balanced if and only if its points can be separated into two mutually exclusive subsets such that each positive line joins two points of the same subset and each negative line joins points from different subsets.

Using the structure theorem, one can see at a glance that the s-graph of Fig. 7 is balanced, for *A, B, C, D,* and *E, F, G, H* are clearly two disjoint subsets of the set of all points which satisfy the conditions of the structure theorem.

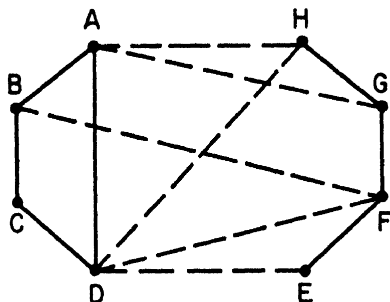


FIG. 7. An s-graph of eight points and thirteen lines which, by aid of the structure theorem, can readily be seen as balanced.

It is not always quite so easy to determine balance of an s-graph by inspection, for it is not always necessarily true that the points of each of the two subsets are connected to each other. Thus the two s-graphs of Fig. 8 are balanced, even though neither of the two disjoint subsets is a connected subgraph. However, the structure theorem still applies to both of the s-graphs of Fig. 8. In the first graph the appropriate subsets of points are *A, D, E, H* and *B, C, F, G;* while in the second one we take A_1, B_1, A_3, B_3, A_5, B_5 and A_2, B_2, A_4, B_4.

In addition to providing two necessary and sufficient conditions for balance, these theorems give us further information about the nature of balance. Thus if we regard the s-graph as representing Heider's L-relation in a group, then the structure theorem tells us that the group is necessarily decomposed into two subgroups (cliques) within which the relationships that occur are positive and between which they are negative. The structure theorem, however, does not preclude the possibility that one of the two subsets may be empty—as, for example, when a connected graph contains only positive lines.

The first theorem also leads to some interesting consequences. Suppose it were true, for example, that when two people like each other they can influence each other positively (i.e., produce intended changes in the other), but when two people dislike each other they can only influence each other negatively (i.e., produce changes opposite to those intended). An s-graph depicting the liking relations among a group of people will, then, also depict the potential influence structure of the group. Suppose that Fig. 7 represents such a group. If *A* attempts to get *H* to approve of something, *H* will react by disapproving. If *H* attempts, in turn, to get *G* to disapprove of the same thing, he will succeed. Thus *A*'s (indirect) influence upon *G* is negative. The first theorem tells us that *A*'s influence

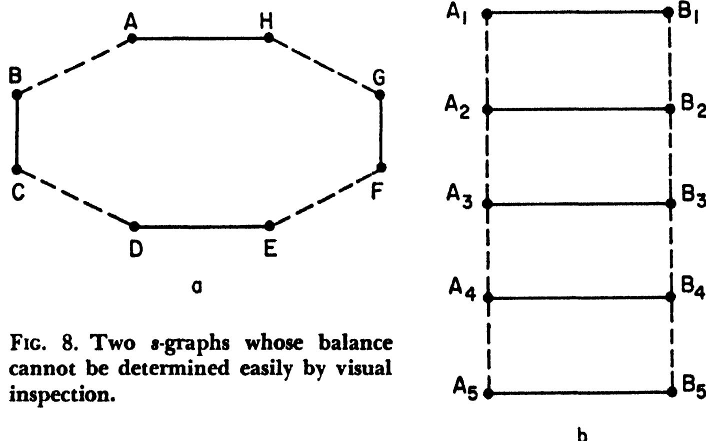


FIG. 8. Two s-graphs whose balance cannot be determined easily by visual inspection.

upon *G* must be negative, regardless of the path along which the influence passes, since the s-graph is balanced. In general, the sign of the influence exerted by any point upon any other will be the same, no matter what path is followed, since the graph is balanced.

By use of the structure theorem it can be shown that in a balanced group any influence from one point to another within the same clique must be positive, even if it passes through individuals outside of the clique, and the influence must be negative if it goes from a person in one clique to a person in the other. (It should be noted that in this discussion we give the term "clique" a special meaning, as above.) Thus, under the assumed conditions, any exerted influence regarding opinions will tend to produce homogeneity within cliques and opposing opinions between cliques.

Although we have illustrated these theorems by reference to social groups, it should be obvious that they hold for any empirical realizations of s-graphs.

Further Concepts in the Theory of Balance

The concepts of balance as developed up to this point are clearly oversimplifications of the full complexity of situations with which we want to deal. To handle such complex situations more adequately, we need some further concepts.

Thus far we have only considered whether a given s-graph is balanced or not balanced. But it is intuitively clear that some unbalanced s-graphs are "more balanced" than others! This suggests the introduction of some scale of balance, along which the "amount" of balance possessed by an unbalanced s-graph may be measured. Accordingly we define the *degree of balance of an s-graph* as the ratio of the number of positive cycles to the total number of cycles. In symbols, let G be an s-graph,

$c(G)$ = the number of cycles of G,
$c_+(G)$ = the number of positive cycles of G, and
$b(G)$ = the degree of balance of G.
Then

$$b(G) = \frac{c_+(G)}{c(G)}.$$

Since the number $c_+(G)$ can range from zero to $c(G)$ inclusive, it is clear that $b(G)$ lies between 0 and 1. Obviously $b(G) = 1$ if and only if G is balanced. We can give the number $b(G)$ the following probabilistic interpretation: the degree of balance of an s-graph is the probability that a randomly chosen cycle is positive.

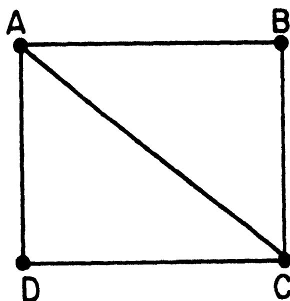


FIG. 9. A graph of four points which can acquire degrees of balance of only .33 and 1.00 regardless of the assignment of positive and negative signs to its five lines.

Does $b(G) = 50\%$ mean that G is exactly one-half balanced? The answer to this question depends on the possible values which $b(G)$ may assume. This in turn depends on the structure of the s-graph G. Thus, if G is the complete graph of 3 points and G is not balanced, then the only possible value is $b(G) = 0$, since there is only one cycle. Similarly, if the lines of G are as in Fig. 9, some of which may be negative, and if G is not balanced, then the only possible value is $b(G) = 1/3$, and $b(G) = 50\%$

does not even occur for this structure. Thus any interpretation given to the numerical value of $b(G)$ must take into account the distribution curve for $b(G)$, which is determined by the structure of G.

We now consider the corresponding concept of the degree of balance for s-diagraphs. Since an s-digraph is balanced if all of its semicycles are positive, the *degree of balance of an s-digraph* is taken as the ratio of the number of positive semicycles to the total number of semicycles.

In a given s-graph which represents the signed structure of some psychological situation, it may happen that only cycles of length 3 and 4 are important for the purpose of determining balance. Thus in an s-graph representing the relation L in a complex group, it will not matter at all to the group as a whole whether a cycle of length 100, say, is positive. To handle this situation rigorously, we define an s-graph to be *N-balanced* if all its cycles of length not exceeding N are positive. Of course the degree of N-balance is definable and computable for any s-graph. Examples can be given of unbalanced s-graphs which are, however, N-balanced for some N. Figure 10 illustrates this phenomenon for $N = 3$, since all of its 3-cycles are positive, but it has a negative 4-cycle.[9]

FIG. 10. An s-graph which is 3-balanced but not 4-balanced.

For certain problems, one may wish to concentrate only on one distinguished point and determine whether an s-graph is balanced there. This can be accomplished by the notion of local balance. We say an s-graph is *locally balanced at point P* if all cycles through P are positive. Thus the s-graph of Fig. 11 is balanced at points A, B, C, and not balanced at D, E, F. If this figure represents a sociometric structure, then the concept of local balance at A is applicable provided A is completely unconcerned about the relations among D, E, F.

Some combinatorial problems suggested by the notions of local balance and N-balance have been investigated by Harary (7). The principal theorem on local balance, which follows, uses the term "articula-

[9] One way of viewing the definition of N-balance is to regard cycles of length N as having weight 1, and all longer cycles as of weight 0. Of course, it is possible to generalize this idea by assigning weights to each length, e.g., weight $\frac{1}{2}^{n}$ to length N.

tion point" which we now define. An *articulation point* [10] of a connected graph is one whose removal [11] results in a disconnected graph. Thus the point *D* is the only articulation point of Fig. 11. We now state the main theorem on local balance, without proof.

Theorem. If a connected s-graph *G* is balanced at *P*, and *Q* is a point on a cycle passing through *P*, where *Q* is not an articulation point, then *G* is also balanced at *Q*.

Figure 11 serves to illustrate this theorem, for the s-graph is balanced at *A*, and is also balanced at *B* but is not balanced at *D*, which is an articulation point.

In actual practice, both local balance and *N*-balance may be employed. This can be handled by introducing the combined concept of local *N*-balance. Formally we say that an s-graph is *locally N-balanced at P* if all

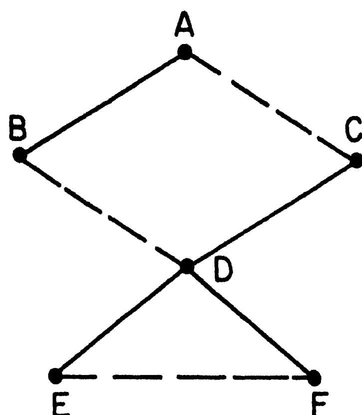


FIG. 11. An s-graph which is locally balanced at points A, B, C but not balanced at points D, E, F.

cycles of length not exceeding *N* and passing through *P* are positive. Obviously the degree of local *N*-balance can be defined analogously to the degree of balance.

In summary, the concept of degree of balance removes the limitation of dealing with only balanced or unbalanced structures, and in addition is susceptible to probabilistic and statistical treatment. The definition of local balance enables one to focus at any particular point of the structure. The introduction of *N*-balance frees us from the necessity of treating all cycles as equally important in determining structural balance. Thus, the extensions of the notion of balance developed in this section permit a

[10] A characterization of the articulation points of a graph, or in other words the liaison persons in a group, is given by Ross and Harary (19), using the "structure matrix" of the graph. An exposition of this concept is given in Harary and Norman (8).

[11] By the removal of a point of a graph is meant the deletion of the point and all lines to which it is incident.

study of more complicated situations than does the original definition of Heider.

Adequacy of the General Theory of Balance

In any empirical science the evaluation of a formal model must be concerned with both its formal properties and its applicability to empirical data. An adequate model should account for known findings in a rigorous fashion and lead to new research. Although it is not our purpose in this article to present new data concerning tendencies toward balance in empirical systems, we may attempt to evaluate the adequacy of the proposed general theory of balance in the light of presently available research.

Our review of Heider's theory of balance and of the research findings related to it has revealed certain ambiguities and limitations concerning (*a*) the treatment of unsymmetric relations; (*b*) the generalization to systems containing more than three entities; (*c*) the distinction between the complement and the opposite of a relation; (*d*) the simultaneous existence of relationships of different types; and (*e*) the applicability of the concept of balance to empirical systems other than cognitive ones. We now comment briefly upon the way in which our generalization deals with each of these problems.

Unsymmetric relations. It was noted above that, while theoretical discussions of balance have sometimes allowed for the possibility of unsymmetric relations, no rigorous definition of balance has been developed to encompass situations containing unsymmetric relationships. Furthermore, empirical studies have tended to assume that liking is reciprocated, that each liking relation is symmetric. By stating the definition of balance in terms of s-digraphs, we are able to include in one conceptual scheme both symmetric and unsymmetric relationships. And it is interesting to observe that, according to this definition, whenever the lines $\overrightarrow{PO}$ and $\overrightarrow{OP}$ are of different signs, the s-digraph containing them is not balanced. Thus, to the extent that tendencies toward balance have been effective in the settings empirically studied, the assumption of symmetry has, in fact, been justified.

Situations containing any finite number of entities. Heider's discussion of balance has been confined to structures containing no more than three entities. The definition of balance advanced here contains no such limitation; it is applicable to structures containing any finite number of entities. Whether or not empirical theories of balance will be confirmed by research dealing with larger structures can only be determined by empirical work. It is clear, however, that our generalization is consistent with the more limited definition of Heider.

A relation, its complement, and its opposite. Using s-graphs and s-digraphs to depict relationships between entities allows us to distinguish among three situations: the presence of a relation (positive line), the presence of the opposite of a relation (negative line), and the absence of both (no line). The empirical utilization of this theory requires the ability to distinguish among these three situations. In our earlier discussion of the literature on balance, we noted, however, a tendency to distinguish only the presence or absence of a relationship. It is not always clear, therefore, in attempting to depict previous research in terms of s-graph theory whether a given empirical relationship should be coordinated to no line or to a negative line.

The experiment of Jordan (11) illustrates this problem quite clearly. He employed three entities and specified certain **U** and **L** relations between each pair of entities. The empirical realization of these relations was obtained in the following way: **U** was made into "has some sort of bond or relationship with"; **∼U** into "has no sort of bond or relationship with;" **L** was made into "like;" and **∼L** into "dislike." Viewed in the light of s-graph theory, it would appear that Jordan created s-graphs of type 2 (which may contain positive and negative lines of type **U** and type **L**). It would also appear, however, that the **∼U** relation should be depicted as the absence of any **U**-line but that the **∼L** relation should be depicted as a negative **L**-line. If this interpretation is correct, Jordan's classification of his situations as "balanced" and "imbalanced" will have to be revised. Instead of interpreting the **∼U** relation as a negative line, we shall have to view it as no **U**-line, with the result that all of his situations containing **∼U** relations are vacuously balanced by our definition since there are no cycles.

It is interesting to examine Jordan's data in the light of this reinterpretation. He presented subjects with 64 hypothetical situations, half of which were "balanced" and half "imbalanced" by his definition. He had subjects rate the degree of pleasantness or unpleasantness experienced in each situation (a high score indicating unpleasantness). For "balanced" situations the mean rating was 46 and for "imbalanced" ones, 57.

If, however, we interpret Jordan's **∼U** relation as the absence of a line, his situations must be reclassified. Oh his 32 "balanced" situations, 14 have no **∼U** relation and thus remain balanced. The mean unpleasantness score for these is 39. The remaining 18 of his "balanced" situations, having at least one **∼U** relation, become vacuously balanced since no cycle remains. The mean unpleasantness of these vacuously balanced situations is 51. Of Jordan's 32 "imbalanced" situations, 19 contain at least one **∼U** relation, thus also becoming vacuously balanced, and the mean unpleasantness score for these is 51. The remaining 13 situations, by having no **∼U** relations, remain imbalanced, and their mean score is

66. Thus it is clear that the difference in pleasantness between situations classed by Jordan as "balanced" and "imbalanced" is greatly increased if the vacuously balanced situations are removed from both classes (balanced, 39; vacuously balanced, 51; not balanced, 66). These findings lend support to our view that the statement "has no sort of bond or relationship with" should be represented as the absence of a line.[12]

Relations of different types. A basic feature of Heider's theory of balance is the designation of two types of relations (L and U). Our generalization of the definition of balance permits the inclusion of any number of types of relations. Heider discusses the combination of types of relations only for the situation involving two entities, and it is clear that our definition is consistent with his within this limitation. It is interesting to note that Jordan (11) finds positive liking relations to be experienced as more pleasant than negative ones. This finding may be interpreted as indicating a tendency toward "positivity" over and above the tendency toward balance. It is possible, however, that in the hypothetical situations employed by Jordan the subjects assumed positive unit relations between each pair of entities. If this were in fact true, then a positive liking relation would form a positive cycle of length 2 with the positive unit relation, and a negative liking relation would form a negative cycle of length 2 with the positive unit relation. And, according to the theory of balance, the positive cycle should produce more pleasantness than the negative one. This interpretation can be tested only through further research in which the two relations are independently varied.

Empirical applicability of concept of balance. Heider's discussion of balance refers to a cognitive structure, or the life space of a single person. Newcomb suggests that a similar conception may be applicable to interpersonal systems objectively described. Clearly, our definition of balance may be employed whenever the terms "point" and "signed line" can be meaningfully coordinated to empirical data of any sort. Thus, one should be able to characterize a communication network or a power structure as balanced or not. Perhaps it would be feasible to use the same definition in describing neural networks. It must be noted, however, that it is a matter for empirical determination whether or not a tendency to achieve balance will actually be observed in any particular kind of situation, and what the empirical consequences of not balanced configurations are. Before extensive utilization of these notions can be ac-

[12] A strict test of our interpretation of Jordan's data is not possible since he specified for any given pair of entities only either the L or U relation. We can but guess how the subjects filled in the missing relationship. In the light of our discussion of relations of different types, in the next section, it appears that subjects probably assumed a positive unit relation when none was specified, since there is a marked tendency to experience negative liking relations as unpleasant.

complished, certain further conceptual problems regarding balance must be solved.

One of the principal unsolved problems is the development of a systematic treatment of relations of varying strength. We believe that it is possible to deal with the strength of relations by the concept of a graph of strength σ, suggested by Harary and Norman (8).

Summary

In this article we have developed a generalization of Heider's theory of balance by use of concepts from the mathematical theory of linear graphs. By defining balance in graph-theoretic terms, we have been able to remove some of the ambiguities found in previous discussions of balance, and to make the concept applicable to a wider range of empirical situations than was previously possible. By introducing the concept *degree of balance*, we have made it possible to treat problems of balance in statistical and probabilistic terms. It should be easier, therefore, to make empirical tests of hypotheses concerning balance.

Although Heider's theory was originally intended to refer only to cognitive structures of an individual person, we propose that the definition of balance may be used generally in describing configurations of many different sorts, such as communication networks, power systems, sociometric structures, systems of orientations, or perhaps neural networks. Only future research can determine whether theories of balance can be established for all of these configurations. The definitions developed here do, in any case, give a rigorous method for describing certain structural aspects of empirical configurations.

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38

A Formal Theory of Social Power

John R. P. French, Jr.

This formal theory is a small part of the later stages of a program of empirical research on social influence. It tries to integrate previous findings into a logically consistent theory from which one can derive testable hypotheses to guide future research.[1] The more specific purpose of the theory is to explore the extent to which the influence process in groups can be explained in terms of patterns of interpersonal relations.

In discussing the effects of the majority on conformity by the individual deviate, Asch states, "The effects obtained are not the result of a summation of influences proceeding from each member of the group; it is necessary to conceive the results as being relationally determined" (14, 186). Both Heider (17) and Newcomb (28) have treated patterns of opinion and of interpersonal relations as a single system of relations, though they have discussed only two-person groups. The present theory reduces the process of influence in *N*-person groups to a summation of interpersonal influences which takes into account three complex patterns of relations: (*a*) the power relations among members of the group, (*b*) the communication networks or patterns of interaction in the group, and (*c*) the relations among opinions within the group. Thus propositions which have been conceptualized at the group level (e.g., that the strength of group standards increases with increasing cohesiveness of the group) are deduced from concepts at the interpersonal level.

The deductive power and the internal consistency of a mathematical model stem from a set of explicit definitions and postulates stated with enough precision so that one can apply the rules of logic. But the con-

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[1] Similar current attempts to construct mathematical theories of social influence include unpublished papers by Ardie Lubin, by Harold Guetzkow and Herbert Simon, and by Solomon Goldberg.

struction of theory by coordinating mathematical definitions and postulates to psychological constructs and assumptions leads to a dilemma: the very precision which gives power to the theory also tends to over-simplify it. For reasons of mathematical convenience one tends to make simple assumptions which so restrict the theory that it may seem unrealistic compared to the complexity observed in social behavior. Game theory, for example, describes certain aspects of how "the rational economic man" ought to behave, but actual economic behavior often departs widely from this simple ideal (19).

The present theory deals with this dilemma partly by utilizing a kind of mathematics, the theory of directed graphs, which does not require the making of precise quantitative assumptions about empirical variables.[2] In addition, the basic concepts and postulates of this theory were chosen to conform to the results of experiments on social influence. Frequently, however, our present knowledge was not adequate for making these choices in precise detail. At these points we attempted to choose postulates which would be essentially correct in their main outlines even though some details would have to be changed as new empirical knowledge accumulates. It is not surprising, therefore, that many of the theorems are quite similar to previous findings about influence on opinions and attitudes, even though no research has been done specifically to test this theory. Nevertheless we have intentionally oversimplified the process of social influence by omitting many important determinants and by making very restrictive assumptions about others. It seemed wise to start by examining the implications of a small number of postulates before proceeding to more complex theories.

The Model

Following the theory of quasi-stationary equilibria of Lewin (22), changes in opinion, attitude, or judgment are conceptualized in terms of forces operating along a unidimensional continuum (5). Social influences are coordinated to force fields induced by person *A* on person *B*; and the strength of these forces is assumed to vary with the power of *A* over *B*. The potential force field corresponding to this power relation will be actualized only if *A* communicates to *B* or interacts with him. When *A* expresses his opinion or argues for it in a way that influences *B*, then the force field operating on *B* has a central position correspond-

[2] The theory of directed graphs, which is an extension of graph theory (15) has been studied by Frank Harary and Robert Norman with a view toward utilization by social scientists. A publication of this work is planned for the near future (16). The author is indebted to these mathematicians for specific help in proving the theorems of this theory as well as for their work on the theory of digraphs upon which it is based.

ing to *A*'s position along the continuum of opinion. All the forces operating on *B* are directed toward this central position, so *B* will tend to change his opinion in a direction which brings him closer to *A*. Similarly, other members, *C, D, E,* etc., who communicate to *B* may set up force fields on him with central positions corresponding to their own opinions. The actual changes in *B*'s opinion will be in accordance with the resultant force from all these induced forces plus a force corresponding to his own resistance.

In order to derive the exact amount of influence that each member will have on the opinion of every other, let us assume that we are dealing with a unidimensional continuum of opinion which can be measured with a ratio scale. We might think, for example, of the classic experiment on social norms by Sherif (31), where the members of the group were asked to state their opinions about how many inches the light moved as they viewed the autokinetic effect. We shall denote the members of the group by *A, B, C, . . .* and their initial opinions by *a, b, c, . . .* respectively, where *a* is the distance of *A*'s opinion from the zero point on the scale. The abscissa of Fig. 1 shows such a scale of opinion together with the

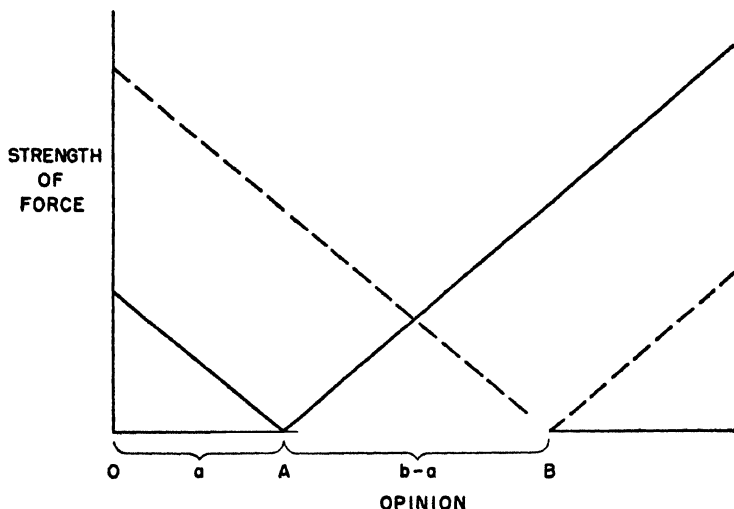


FIG. 1. The force fields influencing opinion.

initial opinions of *A* and *B*. The ordinate indicates the strength of the forces. The gradient of forces around *A* represents the forces he can induce on *B* to agree with his opinion, while the gradient of forces around *B* represent his tendency to resist changing his opinion. Where these two gradients intersect, a distance of $\frac{1}{2}(a + b)$ from the origin, there is an

equilibrium point where the two forces are equal in strength and opposite in direction. At all points to the right of this equilibrium the forces induced by *A* are stronger than *B*'s resistance, so *B* will move toward the point of equilibrium. Conversely, at all points to the left of the equilibrium, *B*'s resistance forces are stronger than *A*'s inductions, so *B* will still move toward the point of equilibrium. Similar calculations of the resultant force and consequent changes of opinion can be made for *A* and for groups with any number of members by placing all members on the same scale and by assuming that the gradient of forces around each member represents both forces he can induce on others and forces he can set up as resistance against others.

The process of influence in a group takes place gradually over a period of time. As one member changes his position and begins to influence others toward his new position, the force fields corresponding to his influence will also shift their central positions. It will be convenient, therefore, to divide the influence process into a sequence of units defined in terms of opinion change rather than in terms of physical time. A *unit* is defined as the time required for all members who are being influenced to shift their opinions to the point of equilibrium of all the forces operating at the beginning of that unit. At the end of the unit, after this shift has taken place, we assume that the members now start to argue for their new opinions. It should be noted that this definition implies that all members respond at the same rate to the forces impinging on them. One possible operational definition of a unit might be a single trial in an experiment such as Sherif's.

This conception of influence as a process over time implies a distinction between direct and indirect influence. In a typical organization the president usually influences indirectly a person at the bottom of the chain of command through orders which are handed down through several subordinates. *Direct* influence is exerted on another person by direct communication which is not channeled through a third person. *Indirect influence* is exerted on another through the medium of one or more other persons. Therefore the direct influence of *A* on *B* always occurs during the same unit, whereas indirect influence requires two or more units. For example, *A* influences *B* directly during the first unit, and *B* influences *C* toward his new opinion during the second unit. Thus *A* has indirectly influenced *C* by transmitting his opinion via *B*. In this model, the power structure and the communication channels of the group are translated into a process of influence over time. In the first unit any member, *A*, influences only those recipients of his communication over whom he has direct power; in the second unit *A*'s influence is also transmitted to all those over whom these intermediaries have power; in

the third unit *A*'s influence is transmitted to those who are three steps removed from him in the power structure, etc.

The Postulates

Three main postulates are involved in this model. The first is concerned with interpersonal power. The definition of *power* used in this postulate is the same as that given by Cartwright (6): the power of *A* over *B* (with respect to a given opinion) is equal to the maximum force which *A* can induce on *B* minus the maximum resisting force which *B* can mobilize in the opposite direction.

The *basis* of interpersonal power is defined as the more or less enduring relationship between *A* and *B* which gives rise to the power. French and Raven (see Chap. 34) have discussed five bases: *attraction power* based on *B*'s liking for *A*, *expert power* based on *B*'s perception that *A* has superior knowledge and information, *reward power* based on *A*'s ability to mediate rewards for *B*, *coercive power* based on *A*'s ability to mediate punishments for *B*, and *legitimate power* based on *B*'s belief that *A* has a right to prescribe his behavior or opinions. Any basis of power can vary in strength: there may be variations in how much *B* likes *A*, in how much *B* respects *A*'s expertness, etc. Postulate 1 is general enough to refer to all bases of social power.

Postulate 1. For any given discrepancy of opinion between *A* and *B*, the strength of the resultant force which an inducer *A* can exert on an inducee *B*, in the direction of agreeing with *A*'s opinion, is proportional to the strength of the bases of power of *A* over *B*.

Attraction as a basis for interpersonal influence has been demonstrated in experiments by Back (2) and by French and Snyder (12), and in field studies by Lippitt, Polansky, and Rosen (24).

Expertness as a basis for interpersonal power has been demonstrated in the latter two studies as well as in many others (18, 26, 27). In unpublished experiments French and Raven and French, Levinger, and Morrison have demonstrated that legitimacy and the ability to punish are bases for social power. Heider (17) and Newcomb (28) state their theories in terms of "positive relations," a more general conception which combines several types of power. In most real groups the power relations probably do combine several of the bases discussed here and others too. Postulate 1 refers to all of these bases combined.

Resistance, as a part of the social power discussed in Postulate 1, has not been treated separately nor in detail in this model. In a further development it might be coordinated to such factors as "certainty of own opinion" (12), or as Kelman (20) and Mausner (25) call it, "prior

reinforcement," and to various personality characteristics such as rigidty and authoritarianism (8).

Postulate 2. The strength of the force which an inducer *A* exerts on an inducee *B*, in the direction of agreeing with *A*'s opinion, is proportional to the size of the discrepancy between their opinions.

This postulate combines two effects which have been demonstrated in previous research. (*a*) More influence is attempted toward the member who is more discrepant (10, 11, 29). These studies also show, however, that this effect holds only under conditions where the inducee is not rejected. Too great a deviation leads to changes in the attraction power structure of the group and hence to changes in the effects implied by Postulate 1. (*b*) If the amount of influence attempted is held constant, the amount of change in the inducee increases with increasing size of discrepancy. For this latter relation, French and Gyr (in a study as yet unpublished) found correlations of .77, .62, .65, and .83 in different experimental groups. Goldberg (13) also reports a strong tendency for the amount of change to increase with increasing discrepancy, with the inducee moving 30 per cent of the way toward the inducer for discrepancies of all sizes. In a subsequent unpublished theoretical paper,[3] Goldberg also assumes that change in opinion is a direct function of discrepancy until the inducee rejects the credibility (expert power) of the inducer, after which it becomes an inverse function of discrepancy. Again the data support Postulate 2 within the range where the expert power structure of the group is not changed.

Postulate 2 is represented in Fig. 1 by the two increasing gradients of forces around *A*'s opinion and around *B*'s opinion. The two gradients are assumed to be linear, though the evidence cited above would suggest that they are curvilinear. We have made the more convenient assumption because it appears to be true as a first approximation and because it seems to be possible to revise the postulate later, if subsequent empirical data do show curvilinearity, with only minor quantitative changes in the theorems.

Postulate 3. In one unit, each person who is being influenced will change his opinion until he reaches the equilibrium point where the resultant force (of the forces induced by other members at the beginning of the unit and the resisting force corresponding to his own resistance to change) is equal to zero.

Postulate 3 is an application of a basic assumption of Lewin (21) that locomotion or restructuring will take place in the direction of the resultant force whenever that force is greater than zero. Though consistent with

[3] S. C. Goldberg, Some cognitive aspects of social influence: a hypothesis. (Mimeographed.)

a great many empirical studies, this assumption is close to a conceptual definition which cannot be directly tested.

Theorems

For lack of space, no attempt will be made to state all the theorems which have been proven nor to give the formal proofs of those presented. Instead we will select some representative theorems and indicate informally the nature of the derivations. In making empirical predictions from these theorems, this theory, like any other, must always assume "other things being equal," including all extrasystem influences and the many factors within the group which are not part of the theory.

The Effects of the Power Structure of the Group

This section presents some theorems concerning the effects of the power structure of the group on the influence process and its outcome. These theorems illustrate how the present theory explains a well known proposition about groups in terms of concepts about interpersonal relations.

This proposition—that the strength of group standards increases with increasing cohesiveness of the group—has been substantiated in several studies (2, 4, 9, 29, 30). A group standard has been defined conceptually as group-induced pressures toward uniformity of behavior or belief, and it may be measured by the degree of conformity of members produced by these pressures. *Cohesiveness* has been defined conceptually as the resultant forces on members to belong to the group, but it has been operationalized in many of these experiments as the attraction of members for one another (7, 23). Festinger, Schachter, and Back (9) have shown that the hypothesized relation is stronger when cohesiveness is operationalized in a way which takes account of the pattern of the sociometric structure instead of a simple summation of choices. But each sociometric choice measuring the attraction of member *B* toward member *A* is, according to Postulate 1, a basis for *A*'s power over *B*. Thus the sociogram of a group can be transformed into the attraction power structure of the group by simply reversing the direction of each arrow. The attraction power structure of the group is a special type of power structure, and hence it is treated in these theorems about power structure and trends toward uniformity of opinion within the group.

The power structure of a group may be represented conceptually in terms of the mathematical theory of directed graphs, called "digraphs." A digraph is a finite set of points $A, B, C, \ldots$ and a subset of the directed lines $\overrightarrow{AB}, \overrightarrow{BA}, \overrightarrow{AC}, \overrightarrow{CA}, \overrightarrow{BC}, \overrightarrow{CB}, \ldots$ between distinct points. In

representing power structures as digraphs, we shall coordinate points to members and directed lines to power relations between members. In this coordination we shall make only relatively crude distinctions in differences of power: if "A has power over B," there is a directed line $\overrightarrow{AB}$ in the digraph representing the power structure of the group; if "A does not have power over B," there is no such line.

Various properties of digraphs may be used to characterize power structures of groups. We shall be concerned here primarily with the "degree of connectedness" of power structures. In order to discuss this property we need two definitions: *complete digraph* and *directed path*. A digraph is complete if there exists a directed line from each point to every other point. A power structure would be complete, then, if each member had power over each other member. If we assume that when A chooses B sociometrically B has power over A, then it follows that when every member of a group chooses every other member, the digraph representing the power structure of the group will be complete (e.g., No. 5 in Fig. 2). A *directed path* is a collection of distinct points $A, B, C, \ldots,$ together with the lines $\overrightarrow{AB}, \overrightarrow{BC}, \ldots$ If in the power structure of a group there is a directed path from A to C, it follows that A can exert influence on C even though A may not have direct power over C (there must be a sequence of directed lines originating at A and going to C even though there is no line $\overrightarrow{AC}$).

In their work on digraphs, Harary, Norman, and Cartwright (16) have defined four degrees of connectedness. Their definitions are as follows: (*a*) A digraph is *strongly connected* (or *strong*) if for every pair of distinct points, A and B, there exists a directed path from A to B *and* a directed path from B to A. It follows that every complete digraph is strong, but not every strong digraph is complete. (*b*) A digraph is *unilaterally connected* (or *unilateral*) if for every pair of points, A and B, there is a directed path from A to B *or* from B to A. (*c*) A digraph is *weakly connected* (or *weak*) if it is impossible to separate the points of the digraph into two classes such that no line of the digraph has one end point in one class and the other end point in the other class. Thus, for every possible separation of all of the points of a weak digraph into two disjoint, nonempty classes, there must be at least one line having one end point in one class and the other end point in the other class. (*d*) A digraph is *disconnected* if it is not weak. Thus a disconnected digraph may be separated into two (or more) disjoint classes of points such that no line goes from one class to the other. From these definitions it is clear that all strong digraphs are unilaterally and weakly connected and that all unilateral digraphs are weakly connected. It is also clear that all weak digraphs are *not* strongly connected. For this reason it is useful to define

a digraph as *strictly unilateral* if it is unilateral but not strong, and to define a digraph as *strictly weak* if it is weak but not unilateral. In our discussion here, when we speak of unilateral or weak digraphs we shall mean "strictly unilateral" and "strictly weak."

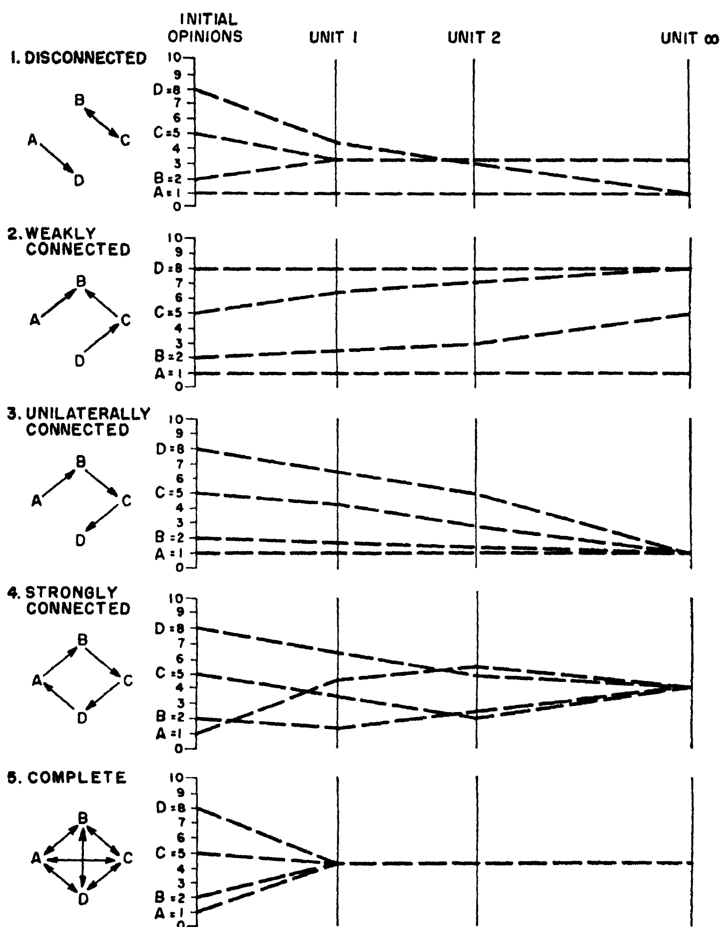


FIG. 2. The effects of connectedness on opinion changes in the group.

In groups where each member communicates to all others over whom he has direct power during every unit of the influence process, the amount of uniformity achieved and the speed of achieving it tend to vary with the degrees of connectedness of the power structure, except that no differences were proved for weak vs. disconnected digraphs.

The effect is illustrated in Fig. 2, and generalized later in the first four

theorems. In Fig. 2 five different types of structures (complete, strong, unilateral, weak, and disconnected) are illustrated by digraphs of four-person groups. To the right of each structure are curves showing some of the theoretically predicted changes of opinion. The ordinate gives the scale of opinion and, at the left, the initial opinion of members *A, B, C,* and *D*. The line labeled "Unit 1" gives the distribution of opinion after the first unit; the line labeled "Unit 2" gives the distribution of opinion after the second unit; and the line labeled "Unit ∞" gives the equilibrium of opinions reached in an infinite number of units.

The disconnected structure is composed of two cliques, *AD* and *BC*. Between these two cliques there are no paths of influence, regardless of direction. Consequently neither clique can influence the other, and each will eventually end up with a different opinion. Within the *AD* clique, influence is all in one direction, so *A* will eventually swing *D* over to his opinion. Since *D* only moves half-way in each unit, however, he will require an infinite number of units to move all the way. Accordingly the dotted lines show *D*'s opinion converging to *A*'s at infinity, while *A*'s opinion remains unchanged. Within the *BC* clique, influence is mutual, so in the first unit *B* will influence *C* to move halfway from 5 to 2 on the opinion scale, and likewise *C* will influence *B* to move half-way from 2 to 5. Therefore both *B* and *C* will arrive at $3\frac{1}{2}$ on the opinion scale in the first unit and will remain in agreement thereafter.

The weakly connected structure is more highly connected but still does not result in unanimous agreement. In this case there is no directed path, for example, between *A* and *D*, so neither can influence the other.

The unilaterally connected structure has a directed path in at least one direction between every possible pair of points. Because it has a higher degree of connectedness, it shows more convergence of opinion.

The strongly connected structure has directed paths in both directions between every possible pair of points. In this example the strongly connected digraph is a cycle, yielding a final common opinion which reflects more equal influence of all members.

The completely connected structure has direct, one-step paths in both directions between the members of every possible pair. It converges in only one unit to a final common opinion.

Theorem 1. For all possible patterns of initial opinion, in a completely connected power structure the opinions of all members will reach a common equilibrium level equal to the arithmetic mean of the initial opinions of all the members, and this final common opinion will be reached in one unit.

Under these conditions where the power and the resistance of all members is equal, we have already illustrated in Fig. 1 that the new opinion of *A* is equal to $\frac{1}{2}(a + b)$, i.e., the arithmetic mean of the opinions of

both members. B's opinion at the end of the first unit b_1 is also equal to $\frac{1}{2}(a + b)$, according to Postulates 2 and 3. Thus this two-person group reaches agreement in one step. The proof of Theorem 1 for an N-person group is a simple extension of this example.

Theorem 2. In an N-person cycle (which is a strongly connected group) the members will reach a final common opinion at the arithmetic mean $(1/N)$ $(a + b + c + \ldots)$, in an infinite number of units.

If A has power over B, then $b_1 = \frac{1}{2}(a + b)$ and b_2, the opinion of B at the end of the second unit, $= \frac{1}{2}(a_1 + b_1)$. In general, B's opinion at the end of any unit will be half-way between his own and A's opinion at the beginning of the unit; so the general difference equation describing B's change of opinion in any unit, n, is: $b_n = \frac{1}{2}(a_{n-1} + b_{n-1})$. Solving these general difference equations for all members constitutes a proof of Theorem 2.

Theorem 3. In a unilaterally connected group the opinions of all members will converge to a final common opinion in an infinite number of steps.

It is an obvious theorem of digraph theory that no strictly unilateral digraph can have more than one point of input zero, i.e., with no directed lines leading to it (because then these two or more points could not have a directed path between them—which violates the definition of a unilateral digraph). It follows that, during every unit, at least one of the two members at the extremes of the range of opinion will be subject to the power of another and will move toward the center, thus restricting the range of opinion still further. Eventually, therefore, all members will arrive at the same opinion. If there is one person in the group with input zero, then all members will eventually agree with his initial opinion, for he will influence the others but no one will influence him.

Theorem 4. In a weakly connected group the members will not reach common agreement except under special conditions in the distribution of initial opinions.

A (strictly) weak digraph contains at least one pair of points with no directed path between them. Thus there are at least two members who cannot influence each other either directly or indirectly.

The disconnected group. When the final equilibrium has been reached, a disconnected group will tend to have at least as many different opinions as there are cliques (i.e., disjoint classes of members), because no clique can influence any other. If all the cliques are themselves either completely connected, strongly connected, or unilaterally connected, it follows from Theorems 1, 2, and 3 that there will be uniformity of final opinions within each clique; but there will be differences among them except under special conditions in the distribution of initial opinion.

Summarizing the theorems illustrated in Fig. 2, we can say that there

is a "funneling effect," a tendency for the opinions of individuals to converge toward one another, and the strength of this tendency increases with increasing connectedness in the power structure of the group. Since the power structure includes the special case of the attraction power of the group, we have a more general group of theorems consistent with the finding that the strength of group standards is determined by the cohesiveness of the group. Additionally the model predicts the exact level of the group standard as well as the precise degree of conformity at each unit. Thus we have rigorously derived a more differentiated statement of the empirically well-established relation between cohesiveness and group standards.

So far we have considered only all-or-none variations in the power of *A* over *B;* now we will illustrate the effect of continuous variation.

Theorem 5. The greater the bases of power of *A* over *B* (*B*'s attraction to *A*, *B*'s acceptance of *A* as an expert, etc.), the more influence *A* will have on *B* and subsequently on any other person *P* for whom there exists a directed path from *B* to *P*.

According to Postulates 1 and 3, increases in the basis of power of *A* over *B* will increase the strength of the resultant force exerted by *A* on *B* and therefore the amount of change produced in *B*. Similarly in subsequent units this influence will be transmitted, though in a weakened form, from *B* to *P*.

The Effects of Communication Patterns

In the preceding section we have dealt with the restricted case of groups of persons whose power is always utilized in every unit.[4] Earlier we noted that the head of an organization may not communicate to all those over whom he has direct power but will instead follow the established channels of communication. Likewise in a face-to-face group a member may remain silent or may attempt to influence some but not others over whom he has power. These patterns of interaction often become stabilized so that they may be treated as more or less consistent channels of communication. It is also clear that the strength of influence attempted can vary continuously, but we shall here treat the communication from *A* to *B* as an all-or-none variable so that we can utilize digraph theory.

Now, if we reverse the conditions of Theorems 1 through 4 and con-

[4] It is probable that *B* will respond partly to the *relationships* among successive influence attempts by *A*, for example to the consistency among his various arguments or to the simple fact of too much reiteration of the same influence attempt; these factors are omitted from the present model.

sider only completely connected power structures with variations in the degree of connectedness of the communication channels, we can apply the same four theorems and proofs. For example:

Theorem 1a. For all possible patterns of initial opinion, in a completely connected communication network, the opinions of all members will converge to a common equilibrium level equal to the arithmetic mean of the initial opinions of all the members; and this final common opinion will be reached in one unit.

Similarly, theorems analogous to 2, 3, and 4 can be stated for strong, unilateral, and weak communication networks, respectively. All possible networks in experiments of the Bavelas type (3) are included in these theorems.

Even where stable communication channels do not exist, this model may be applied provided the interaction pattern is specified for each unit. Consider a strongly connected cycle of three persons. Theorem 2 states that opinions in this group will converge to a final common opinion equal to $\frac{1}{3}(a + b + c)$. In Theorem 6 we assume a particular communication pattern: A exerts influence in the first unit, B and C exert influence in the second unit, A exerts influence in the third unit, B and C in the fourth unit, and so on.

Theorem 6. In a group where the power structure is a three-person cycle in which A has power over B, B has power over C, and C has power over A, and the communication pattern is $A, BC, A, BC, \ldots$, the final common opinion in the group equals $\frac{1}{5}(2a + b + 2c)$.

We note that a change in the interaction pattern changes the outcome considerably. Furthermore B and C no longer have equal influence, even though they have equal interaction patterns and similar positions in the power structure; it is the interaction of these two factors which produces the difference. A has more influence than B because he comes first in the sequence of interaction, but C has more influence than B because he has direct power over A, whereas B's power over A is indirect. Intuitively it would appear that the "primacy effect" shown in this theorem can be generalized: the sooner a person speaks the more influence he will have.

The Effects of Patterns of Opinion

In an experiment like Sherif's, each member communicates to every other and the members probably have relatively equal power. In such a completely connected power structure with completely connected communication channels, what happens to the opinion of a single deviate member?

Theorem 7. The amount of change of the deviate toward the opinions of the majority is proportional to the sum of the deviations of all other members from the deviate.

By Theorem 1 the amount of change by the deviate D equals $d_1 - d$ which is equal to $1/N(d + a + b + c + \ldots) - d$. Thus the more members in the group the more they will influence the deviate. Also the larger each deviation, the more D will change. Though these predictions are generally congruent with Asch's findings, they probably do not agree in detail (1, 14). However, the conditions of Asch's experiment do not fit the model very well.

Leadership

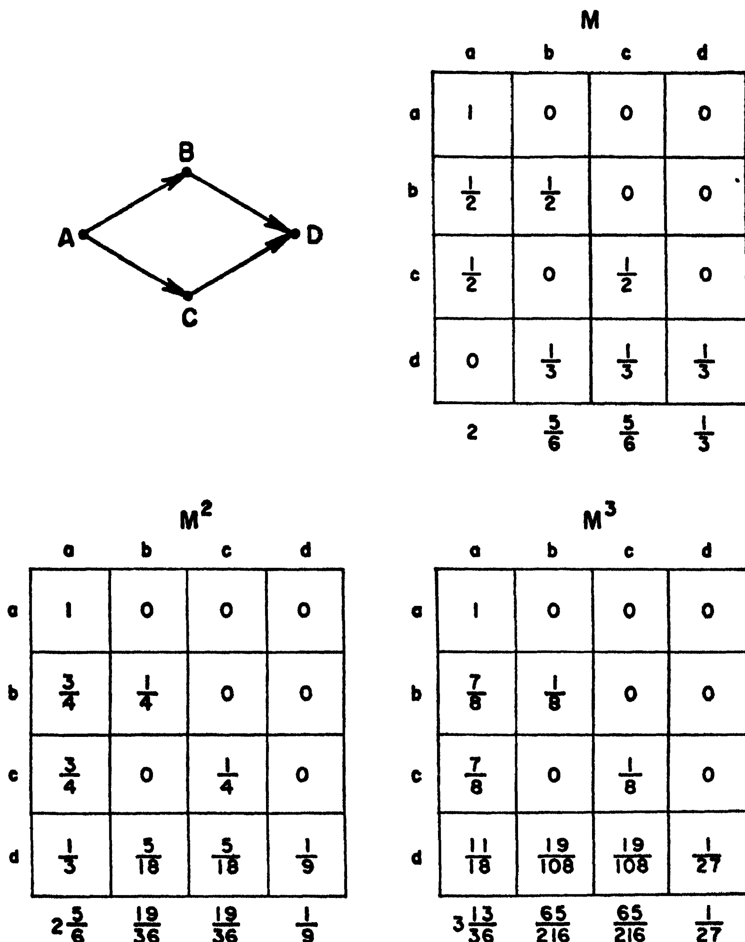
To a large extent leadership consists of a member's ability to influence others both directly and indirectly by virtue of his position in the power structure, including the structure of legitimate authority. Thus leadership may be distributed among many members or concentrated in a few; the pattern of leadership is a distribution which describes the whole group rather than an attribute of single individuals. Figure 2 illustrates the dependence of influence on the total structure of the group.

Compare the influence of member A in the weakly connected group with the influence of member A in the unilaterally connected group. Both groups start out with the same distribution of opinion, and in both groups A has direct influence over only B. However, A's influence is markedly different in the two cases; in the weakly connected group the opinions of others diverge more and more from his, whereas in the unilaterally connected group the opinion of all other members converges completely to A's opinion.

The complete distribution of direct plus indirect leadership in a group with any power structure and any communication network may be calculated by matrix multiplication.[5] We may represent the power structure of the group as a matrix where each row shows the power applied to a member and each column shows the power exerted by a member. A *zero* in the cell corresponding to the *a*th row and the *b*th column shows that B does not have power over A, whereas a *one* in the cell corresponding to the *c*th row and the *d*th column shows that D does have power over C. Thus the number in a cell represents the number of directed lines from the person in that column to the person in that row (under the conditions assumed in this paper, always *one* or *zero*). If this matrix M is multiplied by itself, then the resulting squared matrix M^2 shows in each cell

[5] See Harary and Norman (15) for a brief review of some related applications of matrix algebra to sociometric data.

the number of sequences consisting of two directed lines between the person in the column and the person in the row. The cubed matrix M^3 shows the number of three-line sequences between each pair of persons. By raising the matrix to successively higher powers, we can thus determine the number of directed line sequences, of various lengths, from each member to every other. The matrix M gives the directed lines which will result in influence in the first unit; M^2 gives the two-line sequences through which influence will be exerted by the end of the second unit; M^3 gives the three-line sequences through which influence will be exerted by the end of the third unit; etc.



M

	a	b	c	d
a	1	0	0	0
b	$\frac{1}{2}$	$\frac{1}{2}$	0	0
c	$\frac{1}{2}$	0	$\frac{1}{2}$	0
d	0	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
	2	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{1}{3}$

M^2

	a	b	c	d
a	1	0	0	0
b	$\frac{3}{4}$	$\frac{1}{4}$	0	0
c	$\frac{3}{4}$	0	$\frac{1}{4}$	0
d	$\frac{1}{3}$	$\frac{5}{18}$	$\frac{5}{18}$	$\frac{1}{9}$
	$2\frac{5}{6}$	$\frac{19}{36}$	$\frac{19}{36}$	$\frac{1}{9}$

M^3

	a	b	c	d
a	1	0	0	0
b	$\frac{7}{8}$	$\frac{1}{8}$	0	0
c	$\frac{7}{8}$	0	$\frac{1}{8}$	0
d	$\frac{11}{18}$	$\frac{19}{108}$	$\frac{19}{108}$	$\frac{1}{27}$
	$3\frac{13}{36}$	$\frac{65}{216}$	$\frac{65}{216}$	$\frac{1}{27}$

FIG. 3. The distribution of leadership in a weakly connected group.

In order to apply this process to Group G in Fig. 3, we construct a matrix of opinion M where the columns a, b, c, d represent influence exerted by the initial opinions a, b, c, d of persons A, B, C, D, respectively. The rows represent the influence received by these opinions from all the opinions in the group. Thus the cell entries must show the amount by which an opinion is changed by another opinion during one unit; and these values are given by the coefficients in the right hand side of the general difference equations. For Group G these equations are:

$$a_n = a_{n-1}, \qquad (1)$$
$$b_n = \tfrac{1}{2}(a_{n-1} + b_{n-1}), \qquad (2)$$
$$c_n = \tfrac{1}{2}(a_{n-1} + c_{n-1}), \qquad (3)$$
$$d_n = \tfrac{1}{3}(b_{n-1} + c_{n-1} + d_{n-1}). \qquad (4)$$

The cell a, a has an entry of 1, indicating that in any unit A's opinion is completely determined by his previous opinion; accordingly the remaining cells in row a have entries of *zero*, showing that opinions b, c, d do not influence a, since there are no directed paths from B, C, or D to A. Cells b, a, and b, b have entries of $\tfrac{1}{2}$ because b_n is a compromise half-way between the previous opinions of A and B, etc.

It will be noted that each row in M (and in M^2 and M^3) sums to 1 because it represents the total opinion of a member, and the fractions along the row represent the proportion of that opinion determined by each person. The sum of a column in M, on the other hand, represents the total influence of a person's opinion during the first unit on the opinions of all members (including the influence of his initial opinion on his second opinion—which we have called "resistance").

In M^2 the column sum shows the total influence of a person's initial opinion at the end of the second unit (including the changes produced in both the first and second units). Similarly M^3 shows the cumulative influence at the end of the third unit. The same procedure can obviously be extended to any number of units.

Thus the column totals of the successive powers of M give the distribution of leadership over time, as predicted by this theory. In Group G, we can see that A, the only member with input zero in the power structure, continuously increases his influence at the expense of the other members. B and C, having symmetrical positions in the structure, show the same curves of decreasing influence; but D, who is influenced by all other members, has the least influence.

Conclusions

This theory illustrates a way which many complex phenomena about groups can be deduced from a few simple postulates about interpersonal

relations. By the application of digraph theory we are able to treat in detail the *patterns of relations* whose importance has long been noted by the field theorists. Even if this treatment does not turn out to be empirically correct, it illustrates the need for some such conceptual and mathematical tools if we are to make progress toward the theoretical integration of psychology and sociology.

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39
The Dynamics of Power

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This is one in a series of reports on a program of research into the process of social influence in groups of children (5, 8, 9, 10). Our initial curiosity focused on the phenomenon of behavioral contagion described and clinically conceptualized by Redl (11) in an analysis of some of the operational problems of group therapy. We defined *behavioral contagion* as the spontaneous pickup or imitation by other children of a behavior initiated by one member of the group where the initiator did not display any intention of getting the others to do what he did. This is distinguished from *direct influence*, in which the actor initiates behavior which has the manifest objective of affecting the behavior of another member of the group. We decided to study the hypothesis that the initiation of, and receptivity to, such social influences was related to the position of the actor in the social structure of the group.

The first field study, in 1948, collected data in two camps for disturbed children. One was a boys' camp and the other was for girls. We decided it would be desirable to replicate the study in the boys' camp and were fortunate in again securing full collaboration from the same camp, the University of Michigan Fresh Air Camp[1] (hereafter referred to as M-camp). We selected the same age group as in the earlier study, and again chose for investigation four cabins during each of the two camp sessions. The most significant measurements were duplicated as carefully as possible.

The first study was concerned with groups of disturbed children from a lower socio-economic background. We decided to find a contrasting

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population of middle class nondisturbed boys. It seemed important to try to find a camp with the same double four-week session, the same size group and adult-child ratio, and as nearly the same program philosophy as possible. After considerable exploration, we were fortunate in securing the wholehearted collaboration of Camp Manito-wish in Wisconsin (hereafter referred to as W-camp). The two research teams of three each were trained together in the use of the same instruments and then spent the summer separated, collecting data in the two camps. One member of the W-camp team spent a final week in M-camp to get an estimate of the intercamp observation reliability.

This report summarizes the comparative findings on behavioral contagion and direct influence processes in the M- and W-camps, and also reports the 1948 data so that the replication of the findings in M-camp can be evaluated, as well as the degree of generalization of the findings to the new type of population in W-camp.

After a number of exploratory excursions, it has seemed to us most fruitful to reformulate our theorizing as contributing to a systematic theory of social power in the face-to-face group. Theorizing about the dynamics of power in larger social structures has proved stimulating in such contributions as those of Weber (3), Parsons (7), and Goldhamer and Shils (4). The latter have suggested that power may be measured by the number of successful power acts divided by the number of attempts made. This idea is very similar to one of the indices used in our two studies (percentage of success of direct influence attempts). Another springboard for us has been the work of Festinger and his co-workers (2). They have followed Lewin (6) in defining power as potentiality to exert influence. As we see it, the dimensions of the concept of social power can be differentiated as units in the following definition.

Social power is (*a*) the potentiality (*b*) for inducing forces (*c*) in other persons (*d*) toward acting or changing in a given direction.

Obviously, there can be no direct operational definition of this concept because so many situations and interactions would have to be explored to discover the exact boundaries of "potential" power. In our study we have made two attempts to approximate a measure of power.

By getting the judgments of all members on the degree of ability of each member to influence "the other fellow," we have computed an *index of attributed power*. This index is, of course, an inadequate direct measure of power for several reasons. For example, the power of one or several members may be untested by the events of group life. There may be a bias of being unwilling to recognize the power of a member to whom one does not willingly submit. But the stability of the index over time, the amount of intermember agreement in making the judgments, and the consistent predicted relationships to other variables suggest that this

index represents a good approach to one aspect of the power syndrome.

The second measure is an index of the degree of behavioral success the member has in attempting to influence others. We might call this an *index of manifest power*. This also is only an indirect approximation of power, because a person with high power may not attempt to exert that power, or may exercise it only in very limited degrees and situations.

It is within this general theoretical framework that we have attempted to organize our findings, and to which we shall return for interpretation in the final section.

Methods of Data Collection and Analysis

The variables we wanted to measure have been indicated by the theoretical interests outlined above. Because one important objective of the study was to replicate the previous one, we had to consider seriously whether to repeat a particular measurement procedure exactly or refine our measurement of the variable on the basis of what we had learned from experience.

The Measurement of Attributed Power

In the first study, the children sorted the pictures of the other members of the group into colored boxes on a number of dimensions which were combined into an attributed power index. This was an individual interview situation (10). On each dimension the child was only asked to select two children, the top one and the bottom one. The data from the five highly correlated dimensions of (*a*) ability in athletics, (*b*) independence of adults, (*c*) having ideas for fun, (*d*) sex sophistication, and (*e*) independence of social pressure, were combined into an attributed power index in order to get a stable measure which would differentiate the children. This combined index was highly related to the single criterion of projected group influence ("who is best at getting the others to do what he wants them to do"); but each child had only rated two children, so we did not feel the single measure was stable enough to use alone as the measurement of attributed power. In the current study, we refined the data from the single question of "who has influence" by asking each child to rank every other child by hanging the pictures in rank order on a row of nails on a board.

We decided to use this single "purer" measure of attributed power rather than the combined index because it seemed likely to us that, if the two camps were as widely different as we predicted, the various questions about physical strength, sex sophistication, etc., would have quite different meanings and relations to attributed power in the two

camps. Therefore in our report of findings our improved direct measurement of perceived influence is compared with the combined attributed power index of the 1948 study. As in that study, these sociometric interviews were conducted during the first and last weeks of the four-week camp session.

Measurement of Liking and Identification

In 1948 and in 1950, each child ranked the other members of his cabin group on the criterion of "like to be with." In the 1950 study, we added another question which asked each boy to select some other boy in the cabin he "would most like to be." We hoped this latter question would sharpen our understanding of the relationship between interpersonal feelings and the exerting of social influence.

Measurement of Perceived Characteristics of Each Member

Using the same picture ranking technique, each child ranked the other group members on goodness in sports, fighting ability (added in second study), sex sophistication, and knowledge of campcraft.

Each counselor ranked each child in his group four times during the period on scales of adult relatedness, impulsiveness, group belongingness need, feeling of acceptance by the group, conformity to group pressures, warmth of relations with peers, social sensitivity, and activity level. The counselors also did the same rank ordering task as the boys on the items above (liking, attributed power, projected popularity, goodness in sports, fighting ability, sex sophistication, campcraft knowledge).

The Measurement of Self-Perception

A significant addition to the measurement program of the second study was asking each child to place his own picture in the rank order for the dimensions of fighting ability, independence of adults, being liked, and influence in the group. A pilot study in the intervening summer had indicated that children were ready and able to do this without any discoverable problems of anxiety or other aftereffects in the group.

The Measurement of Behavioral Contagion and Direct Influence

A precategorized observation schedule was used by a team of field observers to record behavior. As in the first study, an incident of *behavioral contagion* was defined as: "An event in which a person's behavior is changed to resemble that of another person. This change occurs in a

social interaction situation in which the person acting as the 'initiator' has not communicated intent to evoke such a change in the other." Each child who picked up the behavior was recorded as a *recipient* of the particular contagion. A *direct influence attempt* was defined as: "A social interaction in which one child consciously and deliberately tries to get another child to do something, in such a way that the research observer is aware of the intent." The manner of the influence attempt was coded as directive (ordering, commanding) or nondirective (suggesting, requesting).

The Measurement of Total Activity

On a periodic sampling basis, as indicated by the time schedule below, the observer focused on a single child in the group and recorded all of his activity, coding it in the two categories of social activity and nonsocial activity. Social acts had as their target other persons and referred to the realm of social interaction. Nonsocial acts were directed toward objects or focused on individual activity and autistic verbalizations and expressive movements. This was an addition to the measurements used in the first study.

Measurement of Other Characteristics of Social Interaction

In addition to the recording of influence and total activity, the observers coded a number of "other behavioral indicators" designed to test hypotheses about behavioral aspects of status. These categories were: (*a*) implies superior knowledge or skill in the other, (*b*) asks permission of the other, (*c*) demonstrates sympathetic or solicitous behavior, (*d*) shows affection-seeking behavior, and (*e*) displays negative or hostile behavior. All observations, in all categories, were recorded in terms of the initiator and the recipient of the act.

The Behavior Sampling Procedure

The observer, following the group throughout the day, recorded data whenever at least three children of the particular cabin group were together. The three observers were rotated systematically among the four cabins being studied. During the total camp period certain children were, of course, observed together more than others. This was an interesting item of data. But to compare the children on such measures as the amount of behavioral influence, all the data were corrected to equate for amount of time together for each pair of children. Corrected indices were computed as frequencies per time under observation. The amount of observation time was roughly comparable in the first and second studies.

Interobserver and Intercamp Reliability of Observations of Behavior

Periodic interobserver reliability checks were made in each camp by having two observers record a sample of cabin behavior simultaneously. The observations of each observer were systematically paired with each other observer's records. Interobserver reliability on relative frequencies of behaviors was computed as a rank order correlation of the data of the two observers for each time sample. The results of this reliability analysis are indicated in Table 31.1. The correlations seem uniformly high enough to give us reasonable confidence in relating our various items of data, and in comparing data from the two camps.

TABLE 31.1

INTEROBSERVER RELIABILITY ON RELATIVE FREQUENCIES OF BEHAVIOR IN 1950 STUDY *

	M-Camp Av. *Rho*	W-Camp Av. *Rho*
Contagion initiation	.79	.90
Contagion pickup	.76	.70
Direct attempt to influence	.91	.76
Recipient of influence attempt	.87	.59
Initiator of other behavior indicators	.89	.87
Recipient of other behavior indicators	.77	.82
Total activity level	.87	.87
% Social behavior	.77	.87

* Although all these figures were not computed in a comparable manner in the first study, the comparable average reliability correlation was 87 for contagion initiation and .76 for contagion pickup in the M-camp in 1948.

Securing Other Objective Indices on Each Camper

In addition to the observation data, counselor rating data, and camper rank-order judgments, we obtained the following information for each camper: (*a*) age, (*b*) height, (*c*) weight, (*d*) last school grade completed, (*e*) socio-economic status of parent as estimated by classification of father's occupation, and (*f*) IQ estimate from the vocabulary section of the Stanford-Binet (Form L, 1937).

The Findings

The results of our two studies are summarized in four sections which focus on answering the following questions: (*a*) To what extent is behavior toward power figures consistent with verbalized attribution of power? (*b*) To what extent is there a self-perception of own power? Does it seem to "guide" behavior output? (*c*) How is the behavior of recipients

of high attributed power different from that of recipients of low attributed power? (*d*) What evidence is there concerning the determinants of how power is acquired in the group?

The Attributor's Behavior toward His High Power Choice

1. *The group member is more likely to "contage" from the behavior of a high power member.* This central hypothesis is confirmed by the data from the M-camp in 1948 and 1950, and the generalization is extended by the similar findings from the new population of normal middle class boys in W-camp. Table 31.2 indicates that the average correlation between frequency of contagion initiation and attributed power position was .58 as compared with .52 in the 1948 study in the M-camp. The average correlation for the new population is also .58. In all four populations studied, a total of 32 groups, it is clear that group members tend to imitate the behavior of those members to whom they have attributed power to influence the group.

TABLE 31.2

RELATIONSHIP OF ATTRIBUTED POWER TO CONTAGION INITIATION

POPULATION	1948 STUDY			1950 STUDY			
	N	Av. *Rho*	Sig.	*N*	Av. *Rho*	Sig.	Av. *Rho* Corrected
M-camp	8 groups 64 boys	.52	.001	8 groups 63 boys	.58	.001	.52
Girls	8 groups 40 girls	.71	.001				
W-camp				8 groups 65 boys	.58	.001	.52

An inadequacy of the 1948 study was our inability to give a precise answer to the question: Might the greater volume of behavioral contagion from children with high attributed power be due almost entirely to a generally higher behavioral output of such children? In the second study an independent measure of total behavior output was made. It will be recalled that the acts making up this total behavior sample were obtained independently from the observations of direct influence and behavioral contagion.

The frequency of contagion initiation for each child was divided by his total activity index, and this weighted frequency was correlated with the prestige ranking of each child. As indicated in the right-hand column of Table 31.2, there was no significant drop in the relationship between

attributed power and contagion initiation when this correlation for total activity level was introduced. Our initial interpretation, that perception of power is a major determinant of contagion pickup, rather than sheer activity output, seems to be confirmed.

2. *The group member is more likely to accept direct attempts to influence him which are initiated by a high power figure.* The 1948 study demonstrated that there are important differences for the recipient between the behavioral contagion type of influence, where the imitation is a spontaneous voluntary act, and the direct influence situation where the actor is explicitly trying to influence the behavior of the recipient of his induction attempt. But, although these are two different types of influence situations, the previous study discovered a comparable relationship between success of direct induction attempts and attributed power position to that discovered between contagion initiation and power. Table 31.3 indicates that this relationship is confirmed by the replication

TABLE 31.3

RELATIONSHIP OF ATTRIBUTED POWER TO FREQUENCY OF SUCCESSFUL INFLUENCE ATTEMPTS

Population	1948 Study			1950 Study			
	N	Av. *Rho*	Sig.	*N*	Av. *Rho*	Sig.	Av. *Rho* Corrected for Total Activity
M-camp	8 groups 64 boys	.56	.001	8 groups 63 boys	.61	.001	.60
Girls	8 groups 40 girls	.54	.001				
W-camp				8 groups 65 boys	.48	.001	.45

study and can be generalized to the new population. In the population of M-camp boys the second study found an average cabin correlation (*rho*) of .61, compared to a correlation of .56 in the first study. The new population of groups of W-camp boys yields an average correlation of .48. All of these relationships are statistically significant.

Again we were able to check in the second study the extent to which total behavior output might be a factor in determining the frequency of successful influence. The right-hand column of Table 31.3 indicates that a correction for total activity of each child does not change the relationship appreciably.

A second and even more important question may be asked. Is the member with high attributed power really more likely to succeed with each of

his influence attempt or does he just make more influence attempts? To check this question, we computed the percentage of induction attempts successful for each child and correlated the rank order of these percentages with rank order of attributed power in each cabin. The average correlation for the 16 groups is .42, which is statistically significant (.001). The average correlation is identical in both camps. In general, then, the higher a member's attributed power, the more likely it is that each of his influence attempts will be successful.

3. *A boy who attributes power to a specific other boy is more likely to "contage" and to accept influence from him.* The statistical analyses reported above have shown that, in general, the boys who receive the most verbal choices as power figures in the group are the most frequent sources of behavioral contagion and are most successful in their influence attempts. But this does not actually demonstrate that the behavior of a particular actor is consistent with his particular attribution of power to others. Perhaps this relationship works in general but it is not a very consistent psychological phenomenon from member to member. To check on this possibility a more refined analysis was made in the second study. The data for each boy were analyzed to check the average amount of his contagion pickup and acceptance of influence from members whom he specifically ranked high (upper half of group) or low (lower half of group) on the dimension of group influence.

Because of our interest in the development of social stratification, we made separate analyses for the first and second half of the four-week camp sessions. With one interesting exception, these data, presented in Table 31.4, confirm the more general statistics reported above.

The table indicates that in both camps, during the early and later parts of the periods, the average camper picked up more behavioral contagion from the boys he specifically rated high on influence as compared to those he rated in the bottom half of the cabin group. In the early part of their life together, the average member did not accept a significantly larger proportion of the influence attempts directed toward him by his high power choices than by his low power choices. A more consistent relationship between perception of power and behavioral submission seems to have developed by the second half of the camp period. In the groups of W-camp boys behavior seems to be in line with perception more consistently from the very beginning.

4. *Attempts to influence high power figures are more likely to be nondirective in manner.* A third prediction of the 1948 study was that when the average group member attempted to influence high power members he would tend to be deferential in his manner of induction. The distinction made by the observers was between directive and nondirective manner of attempted influence. As indicated in Table 31.5, this relationship

TABLE 31.4

RELATION OF OWN POWER CHOICES T[illegible]BEHAVIOR

A

CONTAGION PICKUP FROM HIGH AS COMPARED TO [illegible]W POWER CHOICES

	W-GROUPS			M-GROUPS		
	N *	*M. diff.* †	Sig. ‡	*N*	*M. diff.*	Sig.
First half session	64	+.42	.00[illegible]	61	+.60	.001
Second half session	65	+.76	.0[illegible]	57	+.81	.001

B

PERCENTAGE OF DIRECT INFLUENCE ATTEMPTS ACCEPT[illegible] FROM HIGH AS COMPARED TO LOW POWER CHOICES

	W-GROUPS			M-GROUPS		
	Number Showing Greater % Acceptance From		Chi-Sq[illegible]re Test Sig	Number Showing Greater % Acceptance From		Chi-Square Test Sig.
	High	Low		High	Low	
First half session	41	19	.[illegible]	31	30	not sig.
Second half session	40	25	[illegible]	38	19	.02
Combined halves	45	19	[illegible]1	31	25	not sig.

* The number of campers changes slightly from firs[illegible] second half of session because of new boys entering groups, or insufficient data on several children.
† *M. diff.* equals mean pickup of contagion from high[illegible]wer choices minus mean pickup of contagion from low power choices.
‡ *p*-value was based on *t*-test of difference between r[illegible]ed means.

was confirmed again in the group[illegible]f M-camp boys; but the same relationship did not hold in the grou[illegible]s of middle class W-camp boys, nor did it hold in the girls' camp in t[illegible] 1948 study. Several hypotheses concerning the meanings of this cam difference seem possible. Perhaps the general style of influence is diffe[illegible]nt in the two camps. Or perhaps at-

T[illegible]BLE 31.5

RELATIONSHIP OF ATTRIBUTED PO[illegible]R TO RECEIPT OF NONDIRECTIVE INFLUENCE

POPULATION	1948 STUD[illegible]			1950 STUDY		
	N	Av. *R[illegible]*	Sig.	*N*	Av. *Rho*	Sig.
M-camp	8 groups 64 boys	.4[illegible]	.01	8 groups 63 boys	.28	.10
Girls	8 groups 40 girls	.1[illegible]	not sig.			
W-camp				8 groups 65 boys	.10	not sig.

tempting to influence a member with considerable power is not so dangerous, nor so difficult, in the groups of W-camp boys.

5. *The average member tends to initiate deferential, approval-seeking behavior toward high power figures.* It seems probable that there are many behavioral cues by which one member of the group communicates to another that he "looks up to him" or "looks down on him." Some individuals and groups will be clearer in this communication than others. Some individuals will be more sensitive in reading the cues than others. As described in the section on methodology, the observers in this study systematically recorded behaviors which had the meaning of "implying superior skill," "implying superior knowledge," and "asking for permission." In the first study a sample of four groups in each camp was analyzed. It was found that the upper half of the power hierarchy received significantly more deferential behaviors than the lower half (by t-test $p = .01$ level in boys' camp, .10 in girls' camp). This finding was confirmed in the second study ($p = .001$ and .02 for the two camps).

The Perception of Own Power Position in the Group

On the basis of the 1948 study we inferred that, from the types of interaction reported above, each member would receive cues which would tell him that he was "being looked up to" or "down at" by his fellow members. We inferred that these behavioral messages would usually effect the self-perception of own power or lack of power in the group and that this self-perception would tend to steer one's influence attempts in the group. Certainly there would be many distortions in these self-perceptions arising from past experience in other groups and from wishful thinking in the present situation, but we postulated that a specific self-percept about position in the present group was being formed and was exercising some control over behavior output. In the first study we lacked the data to check directly on this inference. We had evidence that members behaved differentially toward those to whom they attributed various degrees of power, that the members behaved as though they were aware of this information in their attempts to exert influence. But we lacked a measure of the inferred intervening self-perception of power. In the second study each boy ranked himself on amount of power in the group.

6. *Self-perception of own power tends to be consistent with attribution of power by other members.* The strength and direction of this relationship has been tested by two statistics. All self-rankings of influence in the group were ordered in accordance with attributed rankings. For example, self-rankings of all children ranked highest by the group were tabulated together, those ranked next highest were put together. Means of these grouped self-rankings were then placed in rank order and compared with

the attributed rank order. The degree of correspondence was computed as a rank order correlation (see Table 31.6) and shows nearly perfect

TABLE 31.6

RELATIONSHIP OF SELF-RANKINGS OF INFLUENCE TO ATTRIBUTED RANKINGS

Population	*N*	*Rho*	Sig.	*Eta*	Sig.
M-camp 1950 study	8 groups 63 boys	.99 *	.001	.58	.001
W-camp 1950 study	8 groups 65 boys	.98	.001	.81	.001

* The *N* for the *rhos* is actually 8 averaged self-rankings and attributed rankings for M-camp and 9 for W-camp.

correspondence. But this type of correlation may give a maximal statement of the degree of relationship. For example, if all self-rankings were distributed at random among attributed positions, mean self-rankings would be equal. The additions of the self-rankings of one set of accurate children would bring the means into perfect correlation with average attributed rankings. A more accurate index of degree of relationship might be one that determines the amount of variance in self-rankings which can be accounted for by attributed rankings. The values of *eta* for this relationship are reported in the right-hand part of Table 31.6. We can conclude that there is a rather strong positive relationship between the boys' self-rankings of their relative power positions in the group and the way they are ranked by the other members of the group.

7. *Self-perception of own power tends to be consistent with behavior directed toward other members.* Certainly the influence attempts of a given person toward another person or group at a particular moment, in a particular situation, are determined by other factors in addition to one's self-perception of relative power. The requiredness of the activity will be very important in many situations. The potency of the need which one is seeking to satisfy by influencing the other will often be important, as will be who is present at the moment. Emotional relationships will also affect the selection of a particular child as a target. The need of the other child to be influenced may play a part. But over the wide range of camp situations, and over the wide range of opportunities to select one child rather than another as an influence target, we would expect self-perception of own power to be an important factor in determining the nature and amount of one's behavior toward others. Our findings are reported in Table 31.7.

We see that in both camps the boys who perceive themselves as being more influential tend to be more frequent initiators of direct influence at-

tempts (combined p is .02). But only in the groups of M-camp children does this self-perception seem to relate to a more directive pattern of exerting influence. This is part of a consistent picture of camp differences in style of influence. It is interesting to note that in the groups of W-camp boys the members who perceive themselves to be in secure power positions are as ready to accept as to reject influence attempts from others and are generally more active in total behavior toward their social and physical environment. This is not true of the boys in comparable positions in the M-camp where the boys who perceive themselves as high in power are more active rejectors of the influence of others.

TABLE 31.7

RELATIONSHIP OF PERCEPTION OF OWN POWER TO BEHAVIOR TOWARD OTHERS

TYPE OF BEHAVIOR	M-CAMP (N = 8 Groups; 63 Boys) Chi-Square Test (p)	W-CAMP (N = 8 Groups; 65 Boys) Chi-Square Test (p)
Frequency of influence attempts	.10	.10
% of influence attempts which are directive	.01	.70
% of influence attempts from others which are accepted	(−).01 *	.70
Total activity output	.70	.001

* This relationship was significantly negative, i e., high power members are more resistant to influence attempts. All other relationships in this table are in the positive direction.

The Behavior of the Recipient of Attributed Power in the Group

Now we return to the data which replicate the first study, analyzing the relationship between actual attributed power and behavior by the recipient of the attribution.

8. *The recipient of attributed power makes more frequent attempts to influence the behavior of others, and is more successful in these attempts.* As we have seen above, those members to whom high power has been attributed tend to be correct in perceiving this attribution. They tend to use this perceived status as a basis for making more influence attempts than less powerful members. From this linkage, we would expect to find a positive relationship between attributed position and volume of influence attempts. Table 31.8 confirms this inference. We have already noted in Table 31.3 that these influence attempts tend to be more successful when initiated by recipients of high power ratings. Although these relationships are all significant, they are low enough to remind us that important forces are not accounted for. As the 1948 study pointed out, some children who are not high in attributed power act as though they were, in terms of influence attempts, and other children who do have

high power positions do not use their power to wield influence in the group.

TABLE 31.8

RELATIONSHIP OF ATTRIBUTED POWER TO FREQUENCY OF INFLUENCE ATTEMPTS

POPULATION	1948 STUDY			1950 STUDY		
	N	Av. *Rho*	Sig.	*N*	Av. *Rho*	Sig.
M-camp	8 groups 64 boys	.43	.01	8 groups 63 boys	.49	.001
Girls	8 groups 40 girls	.66	.01			
W-camp				8 groups 65 boys	.35	.02

9. *The recipient of attributed power is more directive in his influence attempts.* We have noted previously (Table 31.5) that the second study confirmed the first in showing that members with high attributed power in the groups of M-camp boys tend to be approached more nondirectively in the influence attempts that are directed toward them. This did not seem to be the case in the groups of W-camp boys. Now we ask the question: "Do members with the power to make successful inductions tend to be more directive in their manner?" In Table 31.9, we see that this is the case in the M-camp. In these M-camp cabins those boys with high attributed power are more dominating in behavior pattern, and those with less power are more submissive and deferential in behavior. This is not so clearly the case in W-camp or in the girls' camp.

TABLE 31.9

RELATIONSHIP OF ATTRIBUTED POWER TO PROPORTION OF DIRECTIVE INFLUENCE ATTEMPTS

POPULATION	1948 STUDY			1950 STUDY		
	N	Av. *Rho*	Sig.	*N*	Av. *Rho*	Sig.
M-camp	8 groups 64 boys	.49	.001	8 groups 63 boys	.39	.01
Girls	8 groups 40 girls	.15	not sig.			
W-camp				8 groups 65 boys	.29	.10

Characteristics Associated with Being a Recipient of Attributed Power

Although the focus of the study was on the process of influence rather than on the determinants of influence positions, we have a variety of clues which can be summarized at this point.

10. *High power boys tend to be different in the amount and pattern of their total activity output.* The reader will remember that independent samples of total activity were taken which were broken down into social or person-oriented behavior and nonsocial, i.e., object and activity-oriented behavior. A chi-square test of the upper half on power versus the lower half indicated positive relationships (M-camp, $p = .10$, W-camp, $p = .003$). The relationships with nonsocial activity were not significant. In making this analysis, it was noted that boys in the W-camp who were very low or very high in object-oriented (nonsocial) behavior seemed to have less attributed power than those boys who showed an average amount. A chi-square test of the middle half against the combined upper and lower quarters on attributed power showed a significant relationship ($p = .05$). This suggests that the high power boy tends to be one who, among other characteristics, is high in his social relations output, but also shows an average amount of object-related and program-activity-related behavior, while the boy who is lowest in power ranking is low in social activity and either very high or very low in nonsocial activity.

11. *High power boys have physical superiority.* On the basis of clinical observations, we postulated that the group standards of these cabin groups would place a positive value on physical prowess as a basis for attributing influence position in the group.

When we explore the meaning of this relationship further we find that neither height nor weight is significantly related to attributed power. In the W-camp height, weight, and age are significantly related to perceived fighting ability (by chi-square $p = .001$, .01, and .001, respectively). But in the M-camp none of these variables relate to perceived fighting ability. Observations in the two camps suggest that in the W-camp, where fighting hardly ever occurs, the perception of fighting ability is really a perception of potential fighting ability and is based on the most obvious clues of physical size. In the M-camp, where a good deal of fighting takes place, the perception is actually based on performance, which probably does not correlate very highly with physical size or age in a relatively homogeneous age population, such as in a cabin group.

12. *High power boys are superior in campcraft.* We also thought it was probable in these groups that some power value would be attached to skill in performing the variety of campcraft activities which the adult leadership provides as a part of camp life. This hypothesis is also confirmed. In the M-camp, the *rho* between skill in campcraft as perceived by cabinmates and ratings of power made by the same boys was .74; in the W-camp, the *rho* was .68. Both are significant at the .001 level.

We thought that the "old campers" who had attended camp before would have an advantage in campcraft skills as well as in other ways. But in neither camp did the "old campers" have significantly more attributed

power. Evidently other characteristics outweighed this advantage before much time had elapsed in camp life.

13. *High power boys are liked better and identified with more than other group members.* Certainly we are not able, in this type of analysis, to demonstrate whether boys who achieve high power positions become liked because of their positions or whether boys who are liked have power attributed to them. Such an analysis calls for a developmental or experimental study. However, it will be recalled that each boy did rank all other members of the group on a dimension of personal liking, and also selected the boy in the group he would most like to be. The relationship of these choices to attributed power are reported in Table 31.10.

TABLE 31.10

RELATIONSHIP OF PERSONAL LIKING TO ATTRIBUTED POWER

Ranked Characteristic of the Member	M-Camp			W-Camp		
	N	Av. *Rho*	Sig.	*N*	Av. *Rho*	Sig.
Being personally liked	8 groups	.63	.001	8 groups	.76	.001
Being identified with	7 groups	.68 *	.001	8 groups	.82	.001

* One of the eight cabin correlations was negative and significantly out of line with the rest as a population of correlations. It was omitted from this computation. With it included, the average *rho* is .48.

The intercorrelations between liking, perceived fighting ability, and perceived campcraft skills are appreciably lower than the correlation of each of these factors with attributed power. Probably the various perceived characteristics contribute to varying degrees in attributing influence to the power figures in the group.

14. *IQ and impulsiveness are unlikely determinants of attributed power.* We were able to compute an estimate of intelligence (IQ) in each camp from scores on a vocabulary test. As would be expected from the socio-economic differences, the mean IQ estimate was significantly higher in the W-camp (121 as compared to 103), but the total dispersion of scores was greater in the M-camp. In the M-camp there was no significant relationship of IQ level to attributed power, although the boys in the middle range on IQ tended to have more attributed power than those boys at the top or bottom of the scale. In the W-camp there was a significant positive relationship (by chi-square test $p = .01$) between IQ and attributed power.

Another measure which was of considerable theoretical interest to us, as the result of our findings in the first study, was the counselor ranking of impulse-control. In the 1948 study we found no relationship between ranked level of impulsiveness and influence in the *general run* of camp situations; but where frustration was high and need to attack authority was strong, we found that boys who were ranked high on impulsiveness

tended to become the sources of contagion. In the second study the adult rankings of impulsiveness received indirect validation from relating these rankings to boys' judgments of which boys were most independent of adult control. Impulsiveness related to independence of adults (by chi-square test $p = .001$) in both camps. When we related the rankings of impulsiveness to influence position in the group we confirmed the findings of the first study. There was no relationship of impulsiveness to attributed power in either camp.

Summary and Conclusions

In our introduction we stated three objectives of the study reported in this paper. It seems appropriate to summarize in terms of these aims.

Replication of the Previous Field Study

Our repetition of essentially the same study design in the same camp (of disturbed lower socio-economic class children) revealed the same relationship between the variables of attributed power, contagion initiation, successful direct influence, contagion pickup, and acceptance of influence. The following relationships were confirmed.

1. The group member is more likely to "contage" from the behavior of a high power member.
2. The group member is more likely to accept the induction attempts of members with high attributed power.
3. Attempts to influence members with high attributed power are more nondirective in manner than those attempts directed toward low power members.
4. Members with high attributed power receive more deference behavior from other members than do low power members.
5. Members with high attributed power initiate more social influence attempts than do low power members, and are more successful.
6. Members with high attributed power are more directive in the manner of their influence attempts than the low power members.
7. It was again found that attributed power choices were highly related to child judgments of physical prowess and personal liking.
8. There was no relationship between ratings of behavioral impulsiveness and attributed power in the over-all camp situation.

This confirmation of the major findings of the first study seems to us to be a rather impressive check on the type of behavior sampling and categorization techniques used, as well as lending weight to the validity of the data as representing a true picture of the social influence dynamics of this type of population of groups.

Checking Additional Hypotheses

In the theoretical interpretation of the findings of the first study, we postulated the existence of a self-perception of own power which we inferred would develop from the behavioral feedback of deferential behavior from fellow members. We inferred that this self-percept would act as one determinant of behavior output. By extending our methodology to the measurement of perception of own power in the second study, we were able to confirm the following.

9. Perception of own power position in the group is positively related to actual attributed position.

10. Perception of own power is related to social behavior produced. Those with a self-perception of high power make more frequent, more successful, and more directive influence attempts.

A second missing link in our first study was the lack of information on the variable of total activity level. It was impossible to check on the possible interpretations that high power children might be more frequent sources of contagion because of a higher total activity level than low power children. Our independent measurement of activity level in the second study makes it possible for us to draw additional conclusions.

11. Activity level is not an independent determinant of frequency of contagion initiation or of successful induction.

12. Members with high attributed power do tend to be more socially active than low power members. This is not true for frequency of nonsocial behavior.

In our attempt to explore further some of the determinants of attributed power in M-camp, we made two discoveries:

13. Old campers do not have significantly more attributed power.

14. Intelligence level is not significantly related to attributed power.

Generalization to a Different Type of Population

Our third objective was to explore the generalization of our findings to a very contrasting population of normal middle class boys in a different summer camp setting. As indicated in our presentation of results, most of the basic relations between attributed power, perception of own power, and behavioral influence were found to hold for this different population of groups. But differences were also discovered which have provided clues to further comparative analysis. Camp differences noted in the present paper are the following.

15. In W-camp low power members are not significantly more nondirective in attempting to influence high power members.

16. High power members are not more directive in their attempts to influence low power members.

17. In the W-camp boys who perceived themselves as having high power are not more directive than low power boys.

18. In the W-camp there is a significant relationship between intelligence and attributed prestige, and between height and weight and attributed fighting ability. None of these relationships hold in the M-camp.

These differences seem to suggest a difference in the style and reciprocity of social influence in the two camps, and also differences in certain sources of power, e.g., intelligence, physical size, and conformity.

Toward a Theory of the Dynamics of Power

Our review of the data summarized above has led us to the following tentative theoretical formulation of the dynamics of power in interpersonal group situations of this type.

We hypothesize that achieving and maintaining a position of social power in the cabin group is a positive goal for the members of the cabin group. No doubt some members have stronger needs for social power than others. Some of the boys are probably primarily identified with other groups, so their position in the group under study is not a primary concern. The personality dynamics of other members provide internal restraints against utilizing the power attributed to them, or provide pressures to try to use more power than they have. But probably the acquiring and maintaining of some degree of social power has a positive valence for every member of the group.

We accept as demonstrated that the perceived possession of various combinations of physical, intellectual, and social-emotional resources results in each member being categorized by his fellow members as having more or less social power than others in the group. There is considerable agreement among the members in their judgments of "who is able to get the others to do what he wants them to." This rank ordered consensus we have called *attributed power.*

Our data lead us to believe that in these cabin groups, where group life approaches total 24-hour living, attributed power tends to be undifferentiated as to situation and activity. This is to say, the actor's power may have initially derived from preeminence in some particular type of activity or characteristic, e.g., fighting, sports, campcraft, disobeying adults, strength, or size, but fellow members tend to generalize this preeminence to the general range of group situations and activities.

The data have shown that members tend to behave toward a fellow member in a manner which is consistent with their attribution of power to that member, i.e., behavior toward those with high attributed power tends to be more deferential and less directive.

We accept as demonstrated that most group members perceive cor-

rectly the behavioral cues from fellow members which communicate to them their relative attributed power position in the group.

Also the data lead us to generalize that most members show a tendency to try to utilize (i.e., make manifest) the power which is attributed to them. These manifestations of power through successfully influencing the behavior of fellow members probably have several different psychological meanings at different times for different members, as a means to achieving individual goals calling for instrumental assistance from fellow members, and as a way of demonstrating one's power position in the group.

The findings demonstrate that behavior of a member with high attributed power is more likely to be contagious. We hypothesize that such imitative behavior frequently has the function of being an attempt at locomotion toward the goal of greater social power, in the following ways: (*a*) The behavior of a member in a high power position is sometimes perceived as representing group standards, and so his acts are spontaneously imitated as group approved or group desired acts. (*b*) The high power person is perceived (probably unconsciously) as having the kind of position in the group "I would like to have." Therefore, his actions may be perceived as "the kind of actions which help one to achieve a position like that," so his behavior is picked up by others who would like to be "looked up to as he is." (*c*) From clinical observations we have the hypothesis that in some incidents of contagion a third process may be operating. This is a form of magical thinking in which "acting like him" has the meaning that "I become him" and, therefore, "I am in the same position of influence as he when I act the way he does."

Our comparison of the two camps leads us to believe that, where there is a group atmosphere of competition for power, those in positions of social power tend to be more unwilling to contribute to the manifest power of others. They reject, rather than accept, the influence attempts directed toward them by others.

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40

Power Relations in Three-Person Groups

Theodore M. Mills

In drawing his fundamental distinction between two-person groups and all groups of larger size, Simmel (3) called attention to certain characteristics of the three-person situation. It was important to him the way the position of the third person impinged upon the other two, whether this position be as mediator, as holder of the balance of power, or as constant disturber of the solidarity enjoyed by the other two. He described how a conflict between two can bring satisfaction and strength to a third, and how the sense of unity within a pair could be threatened by the mere presence of another person.

More recently, and on quite another plane, Von Neumann and Morgenstern (4) have made an important contribution by making room, in their theory, for the three-person game and, in their solution, by allowing for a coalition, or an alliance, between two parties to the game. Their theoretical model has a place within it for the coalition, whether it be collusion in the market place, a strong emotional tie, or simply a gentleman's agreement.

It is in this respect, despite wide differences in approach, that Simmel and Von Neumann and Morgenstern share common ground. They either assume or recognize that the most elementary differentiating tendency is or may be for the threesome to segregate into a *pair* and an *other*.

Whether or not this segregation generally occurs and just what position the third party *does* take (or is given) in the face of conflict or alliance between the others are empirical questions. They are precisely the sort of questions that are easier to investigate now than they were before recent developments in the observation of behavior in small groups.

Somewhat generalized, Simmel's observations define the first major

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question of this paper; namely, to what extent and under what conditions are the three relationships interdependent? Does the fact that one is of a certain kind, whatever the kind, determine in any appreciable degree the nature of the other relationships? This first leads quite naturally to a second major problem: when is it found, empirically, that interdependence develops into a sharply differentiated and rigidly set power structure, and when, empirically, is it found that the relations remain in a constant state of fluctuation?

Let me introduce the results of a study of these problems in the small groups laboratory by briefly describing the procedures followed in collecting and ordering the data.

Procedures

Observation Setting

The data consist of observations made of interaction in 48 three-person discussion sessions. Subjects were student volunteers, recruited through Harvard Student Employment Service. Groups were assembled in a room equipped with a one-way screen and an adjacent observation room. Subjects had not previously interacted with one another, and there were no obvious status differences between them. A group performed in two sessions, each lasting about thirty minutes.

Each group was asked to create, from three pictures selected from the TAT series, a single dramatic story upon which all agreed. In the experimental setting there was a minimum of restraints; no limit was placed upon the kind of story, or its content, or upon what member should play what role in its telling.

Collection of Data

Each act was scored in sequence according to Bales's method of interaction process analysis (1). This score shows, first, who initiates the act and to whom it is directed. In addition, it indicates the relevance of the act either to the solution of the problem confronting the group or to the state of integration of the group. Acts classified as relevant primarily to the group problem (categories four through nine) are for present purposes combined and called "contributions." Positive acts (categories one through three) directed specifically to others in the group are called acts of "support." Negative acts (categories ten through twelve) directed specifically to others are called acts of "nonsupport." In this manner interaction is divided into items offered to the group's solution and into positive or negative responses to what is offered.

A summary tabulation of scores for the entire discussion provides two important sets of data: first, the relative number of contributions made by each member; and, second, the exchange of supportive and nonsupportive responses from each member to each other member.

Ordering the Data

These data are ordered in a matrix illustrated in Table 29.1. The member in the group who is highest in contributions is assigned, as

TABLE 29.1

ILLUSTRATION OF MATRIX, SHOWING RATES OF SUPPORT ACCORDING TO RANK ORDER OF CONTRIBUTIONS
(Experimental Group No. 40; Total acts: 493)

AS INITIATOR	AS RECIPIENT			RATE OF TOTAL SUPPORT OUTPUT
	Most Active	Medium Active	Least Active	
Most active		22.1	3.2	15.0
Medium active	24.2		11.1	20.9
Least active	.5	1.0		.8
Rate of total support rec'd.	24.8	23.0	14.3	

initiator, to the first row of the matrix, and, as recipient, to the first column. Others are assigned to succeeding rows and columns according to the rank order of their contributions. Within matrix cells are placed the rates of support between members. In the tabulation, the rate from the most active member to the medium active member is 22.1, and this may be taken to read roughly that the former overtly supports 22% of the latter's contributions.[1] The rate in the adjacent cell indicates that the most active member supports around 3% of the least active member's contributions.

Rates of total support *output* are recorded to the right of the matrix; rates of total support *intake,* below the matrix. The base for calculating *output* is the combined contributions of all members other than the initiator in question.

[1] More precisely, the rates indicate the *preponderance* of supportive versus nonsupportive acts, for the calculation of the rate of support takes into account both classes of acts. Support is assumed to range from positive (where supportive acts outnumber nonsupportive) through zero (where supportive and nonsupportive acts are equal) to negative (where nonsupportive outnumber supportive acts). Details in the calculation of rates to specific persons in the group, and of total output and intake rates, are given in the following formulae:

These procedures result in a standardized matrix presenting two components that are taken together as a first approximation to the definition of the power position of a member: first, the relative number of contributions; and second, the relative frequency of support others give to the author of these contributions. It is inferred, in other words, that a high rate of participation coupled with high support intake means that a member is in a relatively strong position; and that low participation coupled with a low rate of support means that he is in a relatively weak position.

Moreover, for any pair of members, the magnitude of the rates of support are taken as manifestations of the nature of the relationship existing within that pair. Thus, when two members exchange support at a high rate, the relationship is called a *solidary* one, or an *alliance;* whereas, when the exchange is at a very low rate the relationship is called *hostile,* or the pair are said to be in *conflict.* In the group illustrated, it may be said, tentatively at least, that the two more active members are in alliance; the most and the least in conflict; and the medium and least active in an unbalanced, nonreciprocal relationship. The most active member is in the strongest power position, and the least active is in the weakest.

A matrix, like the one given above, is calculated for each session, and these matrices form the base for further steps in ordering the data. In the discussion of central tendencies in the following section, they are com-

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1. The rate at which member 1 supports member 2 (RS_{12}), for example, is given by the equation

$$RS_{12} = 100 \frac{A_{12} - D_{12}}{B_2 + C_2},$$

where A_{12} refers to the frequency of supportive acts initiated by member 1 and directed to member 2. D_{12} refers to the frequency of nonsupportive acts initiated by member 1 and directed to member 2, and B_2 and C_2 combined refer to the frequency of "contributions" (as defined above in the text) initiated by member 2 regardless of the recipients of the acts.

2. The rate of total support output of member 1 ($RTSO_1$) is given by the following equation:

$$RTSO_1 = 100 \frac{(A_{12} + A_{13} + \ldots A_{1n}) - (D_{12} + D_{13} + \ldots D_{1n})}{(B_2 + B_3 + \ldots B_n) + (C_2 + C_3 + \ldots C_n)},$$

where the letter symbols have the same meaning in respect to classes of acts as in the equation above, and where the subscripts, as above, indicate the initiator and the recipient in that order. A single subscript indicates that all initiations, regardless of recipient, are included.

3. The rate of total support intake of member 1 ($RTSI_1$) is given by the following equation:

$$RTSI_1 = 100 \frac{(A_{21} + A_{31} + \ldots A_{n1}) - (D_{21} + D_{31} + \ldots D_{n1})}{B_1 + C_1},$$

where letter symbols and subscripts have the same reference as in the above equations. Note that the use of the letters corresponds to Bales' designation (1, 9).

bined into a "median matrix," and later on they are split into time segments to show trends from the beginning to the end of the sessions.

Findings

Central Tendencies in Exchange of Support

Taking the example of 48 sessions as a whole, what evidence is there to confirm or to refute Simmel's observation that the elementary differentiating tendency is for the threesome to segregate into a pair and a third party? In order to represent the central tendencies in a simple manner, a median matrix is constructed as follows: rates for all cases in any one cell of the matrix (for example, the cell *from* the most active *to* the medium active) are taken to form a single distribution, rates in another cell another distribution, so that for exchange and total rates there are a total of 12 distributions, each with 48 cases. The medians of these distributions are recorded in a single matrix and shown in Table 29.2.

TABLE 29.2

MEDIAN RATES OF SUPPORT ACCORDING TO RANK ORDER OF CONTRIBUTIONS OF MEMBERS
(n = 48 cases)

As Initiator	As Recipient			Rate of Total Support Output
	Most Active	Medium Active	Least Active	
Most active		12.0	7.0	9.7
Medium active	11.1		3.8	8.9
Least active	4.0	2.5		3.5
Rate of total support intake	15.2	15.0	12.4	

Total rates indicate little of major importance to the present discussion. However, what is instructive is the distribution of support between members and this is shown by rates within the matrix.

The highest rates of support are those exchanged between the two more active members and the rates are very nearly the same. Moreover, the frequency distributions, represented here only by the medians, are almost identical in every respect. All other distributions of rates are significantly different from these two. This is to say that, as far as exchange of support is concerned, the relationship between these two members is sharply differentiated from the other relationships. The results for this sample confirm Simmel's observation. The two more active members form the pair and the least active member is the relatively isolated third party.

Interdependence of Relationships

Having taken into account the central tendencies, we are in a position to ask the extent to which individual groups adhere to or deviate from these tendencies and, for any given group, the extent to which the direction of deviation of one relationship is associated with deviations of the other relationships.

Special attention should be called to the fact that deviation is considered not from a median for the specific group, but from the medians for the entire sample; so that there is no technical reason why all rates in a given group may not be above the sample medians, and no reason why all rates might not be below them.

The four possible combinations of deviations within a pair of members are classified as follows:

1. When both parties are above their respective medians in the support of one another, the relationship is called *solidary*.
2. When both parties are below, the relationship is called *conflicting*.
3. When the more active is below and the lesser active above, it is called *dominant*.
4. And, finally, when the more active is above and the lesser active below, the relationship is called *contending*.

The pair of members found above to be singly important in the initial segregation of the group is held constant. Each group, then, is sorted into one of four classes according to whether the type of relationship in the strongest pair is solidary, conflicting, dominant, or contending. Other rates are tested for association. Though in the subsequent tables results are presented for all four types of patterns, in the interest of brevity comments are restricted to the contrasting patterns, the solidary and the conflicting. The former represents radical accentuation of the central tendencies; the latter, reversal of these tendencies.

In Table 29.3 are given four matrices corresponding to the four patterns of relationships in the strongest pair, and within appropriate cells are reported chi-square values of deviations in the remaining relationships. A plus or minus sign indicates the modal direction of deviation from the sample median. The mean rates of support for these relationships are given in Table 29.4.

What effect upon the third party has an alliance between the other two? Results in the first matrix show that there is strict and rigid determination of his position. There is assurance at beyond .05 level that he will oppose both parties to the alliance without discrimination between them. There is assurance that the medium member will, in turn, reject him. Furthermore, there is some assurance, though not statistically significant, that the most active member will also reject him. As shown

TABLE 29.3

ASSOCIATION BETWEEN SUPPORT IN THE STRONGEST PAIR AND SUPPORT IN OTHER RELATIONSHIPS

TYPE OF PATTERN	RANK AS INITIATOR	CONTRIBUTIONS TO χ^2 OF DEVIATIONS OF RATES OF SUPPORT REGARDING THE THIRD MAN MEMBERS AS RECIPIENTS		
		Most Active	Medium Active	Least Active
Solidary $n = 15$				
	Most active	...	(+)	(−) 2.28
	Medium active	(+)	...	(−) 4.44 *
	Least active	(−) 4.44 *	(−) 4.44 *	...
Conflict $n = 13$				
	Most active	...	(−)	(±) 0.0
	Medium active	(−)	...	(+) 1.0
	Least active	(+) 1.0	(+) 1.0	...
Dominant $n = 11$				
	Most active	...	(−)	(+) 1.14
	Medium active	(+)	...	(+) 0.14
	Least active	(−) 0.14	(−) 1.28	...
Contending $n = 9$				
	Most active	...	(+)	(+) 1.28
	Medium active	(−)	...	(−) 0.67
	Least active	(+) 3.56 †	(+) 3.56 †	...

* $P(\chi^2 df_1 \geq 4.44) < 05$
† $P(\chi^2 df_1 \geq 3.56) = .07$

in Table 29.4, compared to other types of patterns, both his intake and output of support are lower in this than in any other pattern. Therefore, what is determined when there is an alliance is a state of opposition between the alliance and the third party.

Not only is this determined position of the third party as weak as a power position can be, but it is likely that power interests involved in it are inversely related to the interests of the other members. The stronger the coalition, the weaker the position of the third man, and vice versa. This means that the interdependency extends through the entire group, resulting in a fully differentiated and determined set of relationships.

In its ideal form this set, composed of one positive and two negative reciprocal relationships, is termed the *true coalition*.

An alliance in the strongest pair threatens the third member. Does a conflict there bring him gratification and rewards, as Simmel suggests sometimes occurs? Chi-square values in the second matrix in Table 29.3 show that in this case there is almost complete lack of determination in

respect to the position of the third party. Apparently he is under no systematic pressures in his support of or opposition to the others, and others are under no systematic pressures in respect to him. Conditions seem to be fluid enough from group to group to permit random fluctuations above and below the respective sample medians. Anything may happen between parties to the conflict and the other member; the only tendency that may exist is the continuation of the conflict.

TABLE 29.4

MEAN RATE OF SUPPORT TO AND FROM THE THIRD MAN, BY SUPPORT PATTERN IN THE STRONGEST PAIR

Type of Pattern	Initiator	Recipient	Rate of Support	Mean Total Rate	
				Intake	Output
Solidary	Most active	Least active	4.33	6.57	0.97
	Medium active	Least active	2.24		
	Least active	Most active	0.40		
	Least active	Medium active	0.82		
Conflict	Most active	Least active	10.13	15.17	5.37
	Medium active	Least active	5.06		
	Least active	Most active	5.45		
	Least active	Medium active	5.37		
Dominant	Most active	Least active	8.21	13.64	1.51
	Medium active	Least active	3.80		
	Least active	Most active	2.90		
	Least active	Medium active	0.28		
Contending	Most active	Least active	13.58	16.10	6.84
	Medium active	Least active	2.73		
	Least active	Most active	8.27		
	Least active	Medium active	4.77		

The position of the third party in this pattern compares favorably with his isolation in the *coalition* pattern, but the significant point shown by the mean rates of support in Table 29.4 is that he fares no better when there is conflict between the others than third men generally do. This indicates that Simmel's example of *tertius gaudens* is an unusual instance rather than a general rule in the three-person interaction situation.

In summary, under the set of conditions where the initial differentiating tendency to segregate into a pair and an other becomes developed radically into an unusually solidary bond, there results unequivocal interdeterminancy of the other relationships; whereas, when this initial tendency is reversed, there is independence among and fluctuation of the other relationships.

These results, therefore, offer a tentative answer to the first major problem, namely, the conditions under which there is or is not interdependence between the three relationships. And they offer a hint in regard to the second major problem, whether or not full-fledged power structures exist. However, before it can be said that a genuine structure has been isolated, it is necessary to carry the analysis a few steps further, for up to now it has been assumed that both the distribution of participation and the support rates themselves remain constant throughout the session. It has been assumed, in other words, that summary figures accurately reflect the state of affairs through all phases of the discussion. These assumptions are tested in the following analysis of temporal trends.

Temporal Trends

Power patterns are made up of combinations of power positions. A power structure is composed of stable positions. The presentation of the evidence for the existence of structures deals, first, with temporal trends for specific positions within patterns and concludes with shifts of patterns themselves from one type to another.

Positions. As stated above, power position is defined by two components; the first is the relative frequency of contributions to the solution of the group's problem, and the second is the amount of positive support received by a member from others in the group. By a stable position is meant one where these two components remain constant relative to other positions from the beginning to the end of the discussion period. Stability is tested for all positions in the four types of patterns.

Turnover in rank order of contributions initiated is given in Table 29.5. Rank in the first phase is recorded along the rows; rank in the third down the columns. Stable positions are, therefore, along the main diagonal.

Results show that in the *solidary* pattern nonshifts are more frequent than expected by chance alone. A level of initiation once attained tends to remain constant. In respect to this component in this pattern, power positions are stable.

In the *conflict* pattern, on the other hand, results show that nonshifts could be attributed to chance alone. There is no assurance whatever of maintaining a given level of initiation. No one member stays in the lead

for any appreciable period of time. In this pattern, power positions are unstable through time.

TABLE 29.5

TURNOVER IN RANK ORDER OF CONTRIBUTIONS INITIATED BY TYPE OF PATTERN

Type of Pattern	Rank in First Phase	Rank in Third Phase			Probability of Observed Number of Nonshifts
		1	2	3	
Solidary	1	13	2	.	
	2	1	10	4	
	3	1	3	11	$p\ (NS \geq 34) < .01$
Conflict	1	7	4	2	
	2	5	4	4	
	3	1	5	7	$p\ (NS \geq 18) > .05$
Dominant	1	9	2	..	
	2	1	5	5	
	3	1	4	6	$p\ (NS \geq 20) < .05$
Contending	1	7	1	1	
	2	2	4	3	
	3	.	4	5	$p\ (NS \geq 16) < .05$

NOTE —The probability model, derived from the one used for the matching problem by Robert R. Bush and C. Frederick Mosteller, is as follows.

$\overline{NS}$ = mean number of nonshifts in rank order = np

$$\sigma^2 NS = npq\frac{n}{n-1}$$

$$p = \frac{1}{R}, \quad q = \frac{R-1}{R}$$

Where:
NS = number of nonshifts in rank order
R = number of ranks
n = total number of subjects in all groups of any given pattern

It is worth noting in passing that in the other two patterns, the *dominant* and the *contending,* the position of the most active member is stable while the positions of the others fluctuate.

In summary, there is one pattern where all positions are stable; there is another where all positions are unstable; and in the others, the strongest position is stable while the others fluctuate. The significantly stable pattern is the *solidary* one, which, as we have seen, tends to develop into

the fully differentiated, interdependent pattern called the *true coalition*. The significantly unstable one is the *conflict* pattern which is notable for its lack of interdetermination.

In respect to the second component in the definition of power position, the amount of support received, stability is measured in terms of gain or loss from the first to the final phase of the session. These gains and losses are presented in Table 29.6. Loss is indicated by a negative sign.

In the *solidary* pattern there occur radical shifts through time. The two more active members gain while the least active loses. For all members there is change. However, this should not be interpreted as a state of instability, for the trends represent neither fluctuation nor reversal, but rather an accentuation of the relations existing at the beginning of the session. The results show clearly that the coalition, once it is formed, grows stronger and the third man weaker.

TABLE 29.6

TEMPORAL GAIN, OR LOSS, IN SUPPORT, BY RANK IN CONTRIBUTIONS INITIATED AND BY TYPE OF PATTERN

Type of Pattern	Average Net Gain		
	Most Active	Medium Active	Least Active
Solidary	+9.3	+14.0	− 9.3
Conflict	−1.5	− 3.8	+ 1.8
Dominant	+8.0	−11.6	−16.1
Contending	+4.5	− 1.3	− 2.2

The *conflict* pattern again contrasts with this picture, for there is little or no change in the rates of support through time. The characteristically low rate of support between members remains low. No one gains and there is not much for anyone to lose.

In summary, for the *coalition* pattern it may be said, first, that positions as contributors remain stable, and second, that gains and losses amount to an unbroken intensification of the initial segregation into a pair and an other. A member within the coalition becomes stronger; the third member becomes weaker. In the *conflict* pattern fluctuation in participation combines with a constant low rate of support between members. Members to the conflict change, but the conflict is perpetuated.

Up to the present point in the analysis there is one pattern—the *solidary* or *coalition* pattern—that possesses the two characteristics of a genuine power structure, that is, internal differentiation and steady trends through time that coincide with this differentiation. The final test for a structure deals with shifts from one power pattern to other patterns.

Patterns. Those patterns that maintain themselves through the session and those toward which others shift are assumed to be stable, while those that rapidly dissolve and toward which no others shift are assumed to be unstable. Table 29.7 gives along the rows the type of pattern in the strongest pair for the first phase and down the columns the type of pattern for the final phase. Within the table are frequencies of shifts and nonshifts.

TABLE 29.7

TEMPORAL SHIFTS IN SUPPORT PATTERNS

SUPPORT PATTERN FIRST PHASE	SUPPORT PATTERN THIRD PHASE				TOTAL
	Solidary	Conflict	Dominant	Contending	
Solidary	10 *	1	1	1	13
Conflict	5	8	3	3	19
Dominant	1	5 **	1	..	7
Contending	2	4	2	1	9
Total	18	18	7	5	48

* $p(x^2 df_8 \geq 15.9) < .01$
** $p(x^2 df_3 \geq 9.41) < .05$

The point of central importance to the present problem is the significant tendency for the *solidary* pattern to remain without change. Only three of 13 cases shift to other patterns, and eight cases shift to it. Not only is the *coalition* pattern self-perpetuating but other patterns dissolve into it. These results, combined with the findings reported above, are taken as confirmation of the proposition that the *coalition* pattern is a genuine power structure. Possibly it is a structure that reflects fundamental dynamic forces in the three-person situation.

The second point of importance is that nonreciprocal patterns tend to shift to the *conflict* pattern. The strongest tendency is in the *dominant* pattern. Finally, it should be noted that there is some tendency for stability in the *conflict* pattern, but that this is counteracted somewhat by a tendency for it to shift to its radically different pattern, the *solidary* one.

Summary

Findings in this section may be summarized in terms of a general classification of power patterns in groups. *Transient patterns* are those, internally differentiated or not, that shift to some other pattern. The *dominance* and the *contending* patterns are examples. *Terminal patterns* are those, differentiated or not, toward which others shift. The *solidary* and the *conflict* patterns are cases in point. Finally, *terminal structures* are those, possessing sharp internal differentiation, that maintain themselves through time and toward which others shift. The single case found empirically to fulfill these conditions is the *coalition* structure.

Insofar as they represent divergent poles toward which groups may develop, the two terminal patterns are important ones emerging from the study. In one direction power relations are structured and there is a steady maximization of the predictability of how members will act toward one another. In the other direction, there is maximization of uncertainty—uncertainty as to who will lead and who will follow. In one direction there is differentiation, stability, predictability; in the other, lack of clear form, rapid fluctuation, unpredictability. The central relationship in one is positive, in the other, negative. Empirically, it is found that about as many groups go in one direction as in the other.

Discussion

It has already been said that the findings confirm Simmel's basic point that the threesome tends to break up into a pair and a third party. However, they do more than this; they enable us to add several important points to his discussion. First, in his analysis of the dyad, Simmel was struck by the possibility of a sense of complete solidarity between the members, and, in progressing to the next larger size group, he assumed, in effect, the existence of this bond. Quite understandably, the added member became important primarily as an intruder or the disturber of this solidarity. It is possible, but hardly necessary, that fear of the third party accounts for the coalition formation, but, in any case, it seems plausible that once formed the coalition's intensity increases simply because there is a common object of opposition for each member of it. The third party, as scapegoat, as common enemy, or whatever he might be called, may serve to cement the coalition as much as he threatens it.

The second point is in reference to the case of *tertius gaudens* which Simmel presents as a particular set of circumstances where conflict between two members results in benefit to the third (3, 154–162). From the above observations, it is found that though this may have occurred in one or two groups it is not a general tendency. However, the principle does

seem involved in the case of the genuine power structure, the true coalition structure. As just stated, there is apparently a secondary gain for the coalition when one member of it opposes the third party. But note that this gain depends directly upon the existence of the coalition, for without it the pattern develops into conflict and fluctuation of positions associated with conflict. This suggests that the principle of *tertius gaudens* can better be seen as an important dynamic aspect of the true coalition structure than as a principle underlying a type of structure all its own.

In view of these points, two simple propositions are suggested as additions to Simmel's principle of initial segregation:

1. The development most threatening to the position of any member in the threesome is the solidarity between the other two.

2. The condition most conducive to the intensification of a solidary bond, once formed, is the presence of a common object of opposition.

Another major point of Simmel's may be paraphrased to the effect that the three-person group is inherently unstable (3, 135–136). If by unstable, he meant absence of a set of determinate, constant relationships, i.e., absence of a power structure, the findings are a clear contradiction of his position. If, on the other hand, he meant that in spite of a structure there are always residual strains, the question remains quite open. There may be a basic incompatibility of interests and gratifications, but to contend from this that residual tensions within members will result in a change in group structure is to assume a less rigid structure than shown by the data. Specification of the conditions under which residual tensions within members do result in a change in group structure is an important problem for further research.

Before they are of general use, these propositions need further test. In fact, a rather long road of research seems required in order to determine to just what extent the above findings may be generalized either to other laboratory groups or, more important, to groups in less artificial settings, such as the family, the mediation situation, the tripartite board, the play group, or the therapy group. Not all groups of three are like the ones in this sample, and not all groups of similar composition operate under the same sets of conditions. Meaningful generalizations can be made only after the significant conditions are taken into account. No attempt is made here to carry out this task, even if it could be done with the present knowledge of groups. Instead, I should like to list some of the conditions surrounding the groups in this sample and conclude by posing several questions that should be answered in extrapolating to other three-person situations.

To mention some of the more important and obvious conditions: (*a*) the groups were *short-lived*—none lasted longer than two hours; (*b*) they were of *unusual composition*—all subjects were adult males, within a

narrow age range, from a single and immediate academic community, and all were in need of part-time work; (*c*) the groups were of *unknown composition*—particularly in respect to personalities and admixtures of these in given groups; (*d*) the groups' *internal, functional organization was amorphous;* (*e*) they worked on *one task* and it was an unusual one; (*f*) while being observed they were kept *immune from all external influences and pressures,* other than those they brought with them; and, finally, (*g*) *their performance was divorced from all reward and from all disapproval* from outside the group.

The list might be extended, but suffice to say that, unless other groups duplicate these conditions, any extension of the findings requires an investigation of the differences in conditions and the role of these differences in accentuating or counteracting the tendencies observed for this sample. We must ask: (*a*) In spite of the differences in conditions, do the findings hold? (*b*) If not, what factors in the new setting account for the negative result? An example in respect to the present findings might be the family where coalitions are commonplace but intensive and continued rejection is rare. What factors not present in the laboratory groups account for this fact? For another example, it is clear that mediation collapses if coalitions do form. Is the hypothesis irrelevant in this case, or are there special provisions that insure a check against "normal" tendencies in the three-party situation? Once these variables are specified, one may in turn ask a final question: (*c*) How may these variables that either intensify or negate originally observed tendencies be introduced into the group setting in the laboratory so that their weight may be measured?

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41
Communication in Experimentally Created Hierarchies

Harold H. Kelley

Only recently have there been systematic investigations of the factors determining the initiation, content, and direction of communications within small face-to-face groups. As an extension of one rather intensive program of research in this area (4), the present study was executed to explore communication phenomena in experimental groups differentiated into high-status and low-status [1] subgroups.

The importance of research on the problem of status differentiation lies primarily in the numerical predominance in our culture of hierarchic groups over undifferentiated ones. Certainly, for our generalizations about communication processes to be of much practical value, they must extend to groups differentiated in many distinct ways. Of theoretical significance is the fact that, in dealing with hierarchic groups, we are forced to integrate a number of basic group psychological concepts: power, valence of position, group structure, and locomotion within the group.

Two prior investigations suggest some tentative hypotheses about communication within hierarchies. In the first of these, Thibaut established high- and low-status levels by favoring the Highs and discriminating against the Lows (6). He studied the effects of this treatment upon sociometric choices and communication between levels. We shall later discuss some of his findings regarding cohesiveness, and compare them with our own. As the discrimination in favor of the high-status subgroups proceeded, the Lows increased in the total amount of communication addressed to the Highs, but decreased in the proportion which was

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[1] In our use of the concept, "status," we shall not attempt to depart from, or to purify, its present meanings. We use it to refer to the combined valence, power, and prestige properties of a subpart of a group. A high-status position is one which affords to the occupant a pattern of activities, roles, privileges, duties, and powers which, by comparison with similar patterns for other positions, are generally deemed to be more desirable and satisfying.

aggressively toned. One explanation advanced for these trends was that the upward communication served as a substitute for blocked upward locomotion. As the possibility of actually locomoting upward decreases, it is supposed that low-status persons increasingly resort to communication to high-level persons as a substitutive means of satisfying their locomotion desires.

The second relevant study involved an analysis of the direction, whether upward or downward, in which planted rumors were transmitted within an existing hierarchic organization (1). Although tentative, the general findings pointed toward the existence of unusual forces to communicate upward, these again being thought to indicate the substitute value of communication for locomotion. There were also indications of strong restraining forces acting against free communication of specific kinds of content such as, for example, information critical of persons at the upper levels.

The general kinds of hypotheses indicated by these studies formed the broad theoretical focus for the present study. Our purpose was to determine some of the driving and restraining forces which act upon various communication content in a group by virtue of that group being structured as a status hierarchy.

Description of the Experiment

Our method was to analyze the communication output of group members in high- and low-status positions, with and without the possibilities of locomotion between levels. Four combinations of status and locomotion possibilities were used: high-status, nonmobile, HNM; high-status, *downward* mobility possible, HM; low-status, nonmobile, LNM; and low-status, *upward* mobility possible, LM. A fifth variation, with no status differential and nonmobile, served as a control group, CNM. These five treatments, while representing only a sample of the possible variations, seemed most appropriate for an exploratory study.

Subjects and Experimental Procedure

All subjects were volunteers from second- and third-year college courses in psychology, sociology, and education at the University of Michigan. The five treatments included the following numbers of men and women: HNM, 13 men and 10 women; HM, 13 men and 9 women; LNM, 18 men and 7 women; LM, 18 men and 11 women; and CNM, 13 men and 6 women.[2]

[2] Because no consistent or meaningful sex differences appeared, we shall present only data for men and women combined.

Eight persons met at each experimental session, all of the same sex, and none having more than passing acquaintance with each other. They were given, although in somewhat more extended form, the following introductory instructions.

The purpose of this experiment is to determine how well a group of people can perform a complicated task when the possibilities for communication among them are limited to written messages. Your group will be divided into equal-sized subgroups, working in separate rooms. The first of these subgroups will be given a specific pattern of rectangles. They will write messages to the second subgroup in the adjoining room, so as to enable the latter group to reproduce the pattern by placing bricks in proper position on the floor. All communications between and within the two subgroups will be restricted to written messages, each addressed to a single specific person (designated by letters and numbers) and identified as to sender. All messages will be delivered first to a connecting hallway, where we will record the time on them before delivering them to the proper persons. You may write messages about anything you wish. Your task is simply to work together so as to reproduce quickly and accurately in one room the pattern given in the other room.

After receiving these initial instructions, the two subgroups went to their respective rooms and independently received further instructions calculated to produce the variations in status and mobility. These instructions we shall describe presently. Unknown to the subjects, both subgroups were given the same task of laying bricks in response to messages apparently coming from the other room. These messages, as well as messages supposedly coming from within the same subgroup—i.e., all communications received by each subject—actually comprised a standard set of stimulus messages prepared before the experiment. Supposedly from the other subgroup, each person received eight messages containing instructions for placing bricks, and six containing irrelevancies—inquiring about their task; wondering about the real purpose of the experiment; suggesting getting better acquainted; expressing dissatisfaction with the job; and criticizing the addressee. Supposedly from his own subgroup, each person received six irrelevant messages—suggesting getting acquainted; wondering about the other job; and expressing discontent with their own job, the other group's efforts, and the experiment in general.

Each of the four persons in a given subgroup received a different set of instructions for placing bricks, but all received the same irrelevant messages. The delivery times of the messages were staggered, so that the four persons would not simultaneously receive the same message at once, which might have aroused suspicion. In general, however, all subjects received approximately the same pattern of communications. From one experimental session to another, identical message content and time and order of delivery were used. Because of this uniformity of treatment, and because there was very little interdependence in their work among the

members of a given subgroup (their tasks were restricted to different sections of the room), we may treat our subjects as independent individuals and as the units in our statistical analysis.

All messages written by the subjects were intercepted and preserved. Very few subjects became suspicious of the experimental procedure. Those in whom we detected suspicion were eliminated from the analysis.

Because of these manipulations, the following conditions prevailed in the experiment:

1. All our subjects were doing the same task, that of following instructions in placing bricks. We had merely to produce differences among them in their perceptions of the status of their position in comparison to the status of the group of instruction-givers which was psychologically present in the next room. Thus, the experimental task was the same for all subjects regardless of their perceived position in the group, and differences among our five variations cannot in any way be attributed to differential task requirements.

2. Because all communication taking place was written, we obtained, in effect, a complete stenographic record of it. We do not know how much the fact of having to write acted to restrict or distort communication. The experimental task was easy enough to allow considerable time to be available for writing messages. The volume of communications resulting from this procedure seems reasonably adequate—approximately 12 messages, or a total of 192 words, per person for the 34-minute period devoted to the task.

3. The inclusion of irrelevancies among the standard stimulus messages reduced the restraints against communicating content extraneous to the task. This was essential, because our theoretical interests lay primarily in such categories of content. Our content analysis seems to indicate the success of this procedure, since well over half the messages contained some irrelevant material.

Production of Status and Mobility Variations

Just before the task period began, appropriate combinations of the following instructions were given to the subgroups in order to produce the five experimental variations. These instructions are intended to produce differential perceptions of the "status" of one subgroup relative to the other, and of the "likelihood of locomotion" into the other subgroup. In all cases, the status instructions were given first and were followed by the mobility instructions.

High-status. Let me summarize your job. Your job is to follow their messages as well as possible in placing the bricks. You have the best job and the most important job in the group. You have the difficult task of translating their

written messages into an actual pattern of bricks here in this room. This translation requires a great deal of insight, comprehension, and accuracy—and even creativity. Some of their directions are bound to be confused, and you'll have to decide which is the most accurate interpretation of what they say. The success of the group will depend largely upon your decisions. They have the poorer job—the more menial and routine one. You have the difficult problem of interpreting their messages so as to reproduce as accurately as possible the master diagram.

Low-status. Let me summarize your job. Your job is merely to follow their messages as well as possible in placing the bricks. They have the best job and the most important job in the group. They have the difficult task of translating the master diagram into words. This translation requires a great deal of ingenuity and creativity. There are many ways in which they can do it and they have to decide which is best. The success of the group will depend largely upon their decisions. Your job is a poorer one—a more menial and routine one. You are simply to follow their messages so as to reproduce as accurately as possible the master diagram.

Control—no status differentiation. Let me summarize your job. Your job is to follow their messages as well as possible in placing the bricks. Obviously the two jobs, that of writing instructions from the given pattern and that of placing the bricks, are equally important to the success of the group. Both you people here and the four in the other room have to do your jobs well and accurately if the group is to do well on this task.

Mobility—locomotion into other subgroup is possible. (In parentheses are the alternatives used in the high- and low-status variations, respectively.) I'm sure you'd find their job to be (less) (more) interesting than your own (but) (and) we may move some of you to the other job during the course of the experiment. We haven't decided yet how many people should be in each room for the most efficiency. So we may have to move some of you to the (poorer) (better) job. The experimenter may come in and move some of you (down) (up) to the (poorer) (better) job in the other room at any time during the experiment.

Nonmobility—locomotion into other subgroup is impossible. (In parentheses are the alternatives used in the high- and low-status variations, respectively.) I'm sure (they'd) (you'd) find (your) (their) job to be much more interesting than (their) (your) own and we'd like to be able to promote some of (them) (you) to (your) (their) job. But in order for the experiment to work best, we want to let (you) (them) stay on it long enough to get used to it and to be able to do (your) (their) best on it. So we'll have to keep (them) (you) on the poorer job throughout the experiment and let (you) (them) stay on the better one.

Special nonmobility instructions for the control group reemphasized the equality of the two jobs and ruled out the possibility that there would be any shifting of subjects from one subgroup to the other.

Kinds of Data

The basic data consist of the messages written by the subjects. We shall describe the categories into which they were analyzed as we present the comparative results for the five variations. In coding the messages, the first consideration was to produce categories that would have bearing on the kind of hypotheses stated earlier. Beyond this, our main concern was

to describe the major dimensions of the messages, whether or not we had ideas about how they could be affected by the experimental variations.

After the period allotted to the task, on the pretext that we were going to do another short task of the same kind, the subjects were asked to decide whether they wanted to continue the job of placing bricks or to change to the job of giving instructions. On the further excuse that two persons in the experimental group had to be replaced, they were asked whether or not they wished to be eliminated themselves, and which other two persons should be eliminated.

Finally, it being decided that the second task should not be attempted after all, they were asked to fill out a sociometric questionnaire on personal preference and contribution to the total group's productivity. This was followed by a group interview consisting of three open-ended questions which, with increasing degree of focus, attempted to ascertain their perceptions of the relationships, status or otherwise, between the two subgroups.

The experimental session was concluded by assembling the subjects, exposing all the details of the experiment, explaining the general hypotheses, describing the tentative findings from pilot studies, answering the subjects' questions, and requesting that they maintain secrecy about the experiment until its completion.

A diagram was made of the pattern of bricks produced by each subject. By comparing this with the pattern produced if the messages were interpreted accurately, it was possible to determine how many errors each person made in his work.

Results

Evidence on the Effectiveness of the Experimental Manipulations

We may first examine our data to determine whether or not the various experimental instructions produced the intended effects. Although no evidence was obtained with regard to the subjects' expectations about mobility, several kinds of data are relevant to their perceptions of the status of their jobs. In Table 30.1 are presented the jobs they chose at the end of the experiment on the pretext of having to do a "second" task. Of those making a choice, the Highs more often than the Lows select the job they've had, while the Lows more often choose the other task. This difference is significant at the 5% level of confidence.[3] The Control

[3] It was not possible to test the significance of the various differences reported here by a single, standard statistical technique. At various points in the data, special conditions, such as small N's, extreme splits, or skewed distributions have made it necessary to use special methods. In selecting the most appropriate one we have carefully considered the properties of our data and the assumptions involved in the methods. In ad-

subjects prefer the other job to about the same extent as do the Lows. Slightly more Lows than Highs wish to have themselves eliminated from the "second" task, but this difference is not significant.

TABLE 30.1

CHOICE OF JOB FOR "SECOND" TASK

Experimental Variation	Percentage of Those Making a Choice *		No Choice	Percentage Asking to be Eliminated Themselves
	This Job	Other Job		
HNM	59%	41%	04%	09%
HM	67%	33%	05%	14%
LNM	32%	68%	12%	20%
LM	44%	56%	07%	14%
CNM	41%	59%	11%	11%

* Highs *versus* Lows: $p < .05$.

In Table 30.2 are summarized the responses to the three open-ended questions given at the end of the session and designed to determine perceptions of the status difference. The set of responses for each subject was coded in terms of whether he felt his job to be lower than, or equivalent to, that of the other group. Replies of having a higher job never occurred.

TABLE 30.2

RESPONSES TO QUESTIONS AT END OF EXPERIMENT INDICATING AWARENESS OF STATUS DIFFERENCE BETWEEN OWN JOB AND OTHER JOB

Experimental Variation	"Our job is lower" *	"The two are equal"	Not Codable in Terms of Status
HNM	30%	52%	17%
HM	41%	41%	18%
LNM	64%	32%	04%
LM	62%	31%	07%
CNM	68%	26%	05%

* Highs *versus* Lows: $p < .01$.

It is evident that the Lows reply more often than the Highs that their job is the lower one, this difference being significant at the 1% level. Although the Controls resemble the Lows in this respect, there are qualitative differences between the two sets of replies. Whereas the Lows describe their job as "low," and one where they have to take orders, they tend to

dition to the standard techniques involving *F*, *t*, and *chi-square*, we have used the exact tests for 2 × 2 tables (5), the *F* test for exponential distributions (2), and the *d* test for testing the significance of means without reference to their frequency distribution functions (3).

defend its importance and rarely say that it is too easy. The Controls simply see their job as relatively unimportant, dull, and too simple. This seems to indicate that, whereas the valence of the "task" is negative for the Controls, it is primarily the "position" that is negative for the Lows.

The final data relevant to the efficiency of the experimental instructions are found in the content of the messages. The primary meaning of high-status versus low-status in this experiment is that of high positive valence of the position as compared with low positive, or even negative, valence. To the extent that the instructions had the desired effect, we would expect the Highs to express more satisfaction with their job and the Lows to make more critical comments about theirs. In Table 30.3 are presented

TABLE 30.3

EXPRESSIONS OF ATTITUDE TOWARD OWN JOB IN THE MESSAGES

Experimental Variation	At Least One Positive Comment	At Least One Negative Comment *	Average Number of Messages Containing Negative References †
HNM	35%	39%	.43
HM	27%	23%	.27
LNM	12%	60%	1.24
LM	24%	66%	1.00
CNM	21%	53%	.79

* Highs *versus* Lows· $p < .01$.
† Highs *versus* Lows $p < .01$.

the data bearing out this expectation. The Highs make more positive comments than the Lows but not significantly more. The Lows make more negative comments than the Highs, and this difference is significant at beyond the 1% level. The Controls seem to be intermediate between the Highs and the Lows with respect both to positive and negative comments.

Although the effects demonstrated here are certainly not as strong as we would like, these data consistently indicate that the experimental instructions created differences in the desired direction between the Highs and Lows with respect to perceptions of the job and satisfaction with it. For the low-status group, the possibility of upward mobility seems to have reduced the unattractiveness of the position, the LM's appearing to be somewhat less dissatisfied with their job than the LNM's. Although the comparisons are less consistent, there is some indication that the possibility of downward mobility reduced the attractiveness of the high-status position. To some extent, then, we can rank the four variations in terms of over-all valence from HNM with the highest positive valence, through HM and LM, to LNM with the highest negative valence. We shall find this order to be helpful in interpreting our data in a number

of instances. The CNM variation fits into the lower end of this order, but, as we have already pointed out, appears to differ qualitatively from the Lows.

The Communication of Irrelevant Content

Over half of the messages addressed to the other subgroups, and about three-fourths of those sent to the same subgroups, were coded as having some content irrelevant to the group task. The frequency of sending irrelevant material (both to one's own and to the other subgroup) varies inversely with the over-all valence order of the four variations. The LNM's send the most messages with irrelevant content, the LM's next most, and the HNM's the fewest. None of the differences between variations are significant for the total samples.

We might assume that the trends in our total data are weak because of the low intensity of effects produced by our experimental instructions. On this assumption we have attempted to intensify the experimental effects by selecting, on the basis of perceived status, those subjects upon whom the experimental instructions had maximal effect. Eliminating Highs who report that their job is "lower," including only Lows who describe theirs as "lower" (Table 30.2), and eliminating four additional cases who indicated in the interview a special awareness of our attempt to give them a "set" by the experimental instructions, we are left with 15 HNM's, 13 HM's, 15 LNM's, and 18 LM's. Because we have a total of only 19 Controls, we have not attempted to select among them.

The data on transmission of irrelevant content for these selected samples are presented in Table 30.4. The result of the selection is merely to

TABLE 30.4

AVERAGE NUMBER OF MESSAGES HAVING IRRELEVANT CONTENT

EXPERIMENTAL VARIATION	DIRECTION OF COMMUNICATION		TOTAL *
	Other Subgroup	Same Subgroup	
HNM	3.33	2.67	6.00
HM	3.69	2.85	6.54
LNM	5.40	3.93	9.33
LM	4.11	3.05	7.16
CNM	4.05	3.74	7.79

NOTE.—For experimental groups selected on the basis of perception of status.
* Analysis of variance for Highs and Lows:

	Degrees of Freedom	Variance
Status	1	56.47
Mobility	1	8.38
Status × Mobility	1	28.57
Error	57	13.06

F = Status/Error = 4.32, $p < .05$.
F = $S \times M$/Error = 2.19, $p < .20$.

emphasize the existing trends. The Lows send more irrelevant messages than the Highs, and mobility seems to interact with status (although not significantly) to produce an order that consistently agrees with the over-all valence of the position.

A reasonable explanation of this inverse relation, between perceived desirability of position and amount of task-irrelevant communication, assumes that irrelevancy provides an escape from the task. The less positively valent a position, the greater the desire to leave it and, consequently, the greater the volume of irrelevant content.

One type of task-irrelevant content—conjectures about the nature of the job in the other subgroup—was examined for the light it could throw upon the substitute locomotion hypothesis suggested by prior studies. This type of communication, which includes queries, surmises, and imaginations about the other job, should provide a substitute for desired locomotion into the other group, if, indeed, any communication can serve such a function. Accordingly, it would occur most frequently for those having low status and little possibility for upward locomotion. There is some support for this hypothesis. Here again, although the trend for the total data is not statistically significant, intensification of the experimental effects, by selection on the basis of perceived status, serves to emphasize that trend and to support the hypothesis. Sixty-seven per cent of the *selected* Lows communicate at least one conjecture about the other job as compared with 46% of the *selected* Highs, this difference being significant at the 11% level. In terms of average number of conjectures, the *selected* Lows send 1.06 while the *selected* Highs send .68, this difference being significant at the 5% level. Although we would expect a difference between the mobile and nonmobile Lows, there is none. It seems likely that the possibility of locomotion was fairly remote in both variations.

Further support for our general hypothesis concerning the occurrence of conjectures about the other job is obtained by dichotomizing our samples on the basis of choosing the same job versus the other job at the end of the experimental sessions (Table 30.1). Assuming that this breakdown distinguishes between those persons who are highly desirous of locomoting into the other position and those who care little, we would expect to find more communication as a substitute for locomotion among the former persons. This proves to be the case as shown in Table 30.5. For the Lows and CNM's, those who choose the other job communicate conjectures about it much more often than do those who are willing to remain in their present positions. The same trends appear for the high-status variations but are much weaker. This is to be expected since, in the case of the Highs, choice of the other job probably reflects only weak forces to locomote. These findings generally seem to warrant the con-

TABLE 30.5

CONJECTURES ABOUT OTHER JOB ANALYZED ACCORDING TO JOB CHOSEN FOR "SECOND" TASK

Experimental Variation	Choice of Job for "Second" Task	*N*	Percentage Making One or More Conjectures	Average Number of Conjectures
HNM	This	13	54%	.77
	Other	9	56%	.89
HM	This	14	71%	.93
	Other	7	57%	1.14
LNM	This	7	43%	.43 †
	Other	15	73%	1.07
LM	This	12	25%	.50 *
	Other	15	80%	1.47
CNM	This	7	57%	.57 †
	Other	10	70%	1.50

* "This" *versus* "Other": $p < .02$
† "This" *versus* "Other": $p < .10$.

clusion that communications in the form of substitutes for actual locomotion tend to be initiated by persons who are in low and undesirable positions and who have strong desires to locomote upward. In the present investigation, this type of communication occurs when the possibilities for real locomotion are absent or slight. Whether or not it would appear in excess among the Lows if the possibility of moving upward were kept real and vivid, the present data do not tell us.

The Communication of Criticism and Confusion About One's Own Job

Criticism of own job. We have already seen that the Lows tend to communicate negative attitudes about their own job more frequently than do the Highs. We find a further effect of status when we analyze the direction in which this content is communicated. In Table 30.6 whereas there is no difference between the status groups in the percentage communicating negative comments about their own job to their own level, significantly fewer of the Highs than of the Lows send such messages to the other level. Although there are alternative explanations, this suggests that there are restraining forces acting on the Highs against expressing criticism of their own job to persons at lower levels. Thus, for those Highs who are enough dissatisfied with their job to communicate it, the tendency would be to transmit it to persons at their own level. For a similar group of Lows the tendency would be, if anything, to transmit it to the upper level. This phenomenon may be part of a general tendency on the part of the Highs to restrict to their own subgroup any communication content which would tend to reduce the valence of the high position for

the low group. It is interesting to speculate that any such reduction for the low group might also decrease the attractiveness of their position for the Highs. This implies that the status of one's own position depends not only upon how he and his peers evaluate it but also upon the evaluation of people at other levels.

TABLE 30.6

PERCENTAGE EXPRESSING NEGATIVE ATTITUDE ABOUT OWN JOB

Experimental Variation	Direction of Communication	
	Other Subgroup *	Same Subgroup †
HNM	17%	22%
HM	09%	14%
LNM	44%	32%
LM	55%	21%
CNM	37%	26%

* Highs *versus* Lows. $p < .01$.
† Highs *versus* Lows: $.50 > p > .30$.

Confusion on the job. In coding the messages, it was found that each person's messages seemed to reflect his general ability to keep up with the influx of work directions. Accordingly each subject was categorized as having "much confusion," "normal confusion," or "no confusion," on the basis of the degree of bewilderment he expressed. This categorization proves to have virtually no correlation with the objective performance measure, number of errors made in placing the bricks. As shown in Table 30.7, the Lows express more confusion about their job than the Highs, this difference being significant at approximately the 8% level of confidence. Although the Lows also tended to make more errors, the difference does not approach significance. In order to demonstrate that the difference in expression of confusion is not due to the slightly superior work of the Highs, Table 30.7 also contains the frequencies of subjects in the three confusion categories for each error score. It can be seen that, with one exception (error score = 1), the Lows express more confusion while doing the same quality of work. It may be noted that the Controls fall between the Highs and Lows with respect both to errors and expressed confusion. This phenomenon is rather difficult to interpret. The alternatives seem to be: (*a*) the Lows tend to express more confusion simply as a means of showing their distaste for the job, or (*b*) the Highs restrain themselves from making public the fact of their difficulties with the task, which fact might show them to be incapable of handling the responsibilities of the high-status position. The nature of the confused messages which enter into this categorization makes the first alternative rather difficult to

TABLE 30.7

EXPRESSION OF CONFUSION ABOUT THE WORK, ANALYZED ACCORDING TO OBJECTIVE QUALITY OF PERFORMANCE

Experimental Variation	Confusion Category	Error Score					Total Frequency in Each Confusion Category *	Percentage in Each Confusion Category
		0	1	2	3	4+		
Highs	None	8	2	5	4	2	21	47%
	Normal	2	5	7	2	2	18	40%
	Much	0	2	0	1	3	6	13%
							45	100%
Lows	None	4	4	0	4	2	14	26%
	Normal	2	7	5	4	7	25	46%
	Much	2	1	4	3	5	15	28%
							54	100%

* Highs *versus* Lows. p equals approx. .08

accept. The slight tendency for the HM's to express less confusion than the HNM's lends support to the second explanation. We would expect the former group, in order to prevent their demotion, to be more likely to prevent circulation of the fact of their confusion on the task. Although the meaning of these data is certainly open to doubt, we find it most reasonable to conclude that they indicate another instance of restraining forces operating upon the communication processes of high-status persons.

The Communication of Criticism of Other Persons

Considerable numbers of messages were implicitly or explicitly critical of the persons to whom they were addressed. The average number of messages containing such criticism is presented in Table 30.8 for each of

TABLE 30.8

AVERAGE NUMBER OF MESSAGES HAVING CONTENT CRITICAL OF THE ADDRESSEE

Experimental Variation	Direction of Communication	
	Other Subgroup	Same Subgroup
HNM	1.56	.43
HM	1.91	.32
LNM	1.76	.56
LM	1.83	.41
CNM	2.37	.47

the five experimental treatments. For all variations, considerably more criticism is addressed to the other subgroup, presumably because all the work directions are received from them. The outstanding difference among the variations is that the CNM's communicate more criticism of persons in the other subgroups than do subjects in any of the other variations. This result leads one to suspect that the mere introduction of a status difference between the subgroups produces restraints against interlevel criticism.

This phenomenon is more strikingly shown in Table 30.9 which summarizes only explicit criticisms of persons in the other subgroup. There it is clear that the Controls communicate more criticism about the other group than either the Highs or Lows, and this holds true for communication to one's own group as well as for communication to the other one. Thus it appears that the restraints introduced by a hierarchy not only operate against criticizing other-level people "to their face," but also discourages being critical of them in communications to one's own level.

TABLE 30.9

COMMUNICATION OF EXPLICIT CRITICISM OF PERSONS AT OTHER LEVEL

EXPERIMENTAL VARIATION	PERCENTAGE COMMUNICATING AT LEAST ONE CRITICAL MESSAGE	AVERAGE NUMBER	
		Other Subgroup	Same Subgroup
HNM	39%	.52	.13
HM	59%	.64	.36
LNM	68%	.52	.52
LM	48%	.41	.28
CNM	78% *	.79 †	.84 ‡

* CNM *versus* Others: $p < .05$.
† CNM *versus* Others: $p =$ approx. .07.
‡ CNM *versus* Others: $p < .01$.

A comparison of the last two columns in Table 30.9 shows that the last statement does not hold equally for the Lows and Highs. A much larger proportion of the Lows' criticism of persons at the other level is directed to their own level. Of the 22 Highs who communicated any criticism of persons in the other subgroup, none sent this criticism exclusively to their own room. Of 31 Lows who criticized persons at the other level, 9 addressed this criticism exclusively to their own subgroups. This difference is significant at the 1% level of confidence. The CNM's resemble the Lows in this respect, i.e., they also tend, relatively speaking, to restrict criticism of the other level to their own room. Although in Table 30.9 the HNM's appear to communicate less total volume of criticism of the other room than do the HM's (perhaps the HNM's have less motivation

to criticize the Lows), the data we have just cited indicate quite clearly that *both* high variations transmit directly to the targets of the criticism a larger proportion of whatever criticism they do feel toward the other subgroup. This result suggests that the Highs feel greater freedom openly to criticize members of the other stratum than do the Lows or Controls. It is quite possible that a high-status position extends the power that occupants feel themselves to possess over certain areas of interpersonal relations within the group, overt and direct personal criticism being one of these areas.

The Effects of Status and Mobility on Cohesiveness of the Total Group

We have both sociometric choices and communication data which reflect the effects of our experimental variables upon interpersonal attractions among the members of the two subgroups. In Table 30.10 are presented the data from the question asked at the end of the session, "Which person in the total group did you like best during the experiment?" The resulting choices are tabulated in terms of whether they consisted of a person in the same subgroup or in the other one. Table 30.10 also presents the frequencies that would have occurred if the choices had been made at random. The tendency in the absence of status

TABLE 30.10

CHOICES OF WHOM THEY LIKED BEST IN THE TOTAL EXPERIMENTAL GROUP

Experimental Variation	Direction of Choice	Obtained Frequency	Theoretical Frequency *	Amount of Over-Choice in Other Subgroup ($f_o - f_t$)
HNM	Other subgroup	20	12.9	7.1
	Own subgroup	3	10.1	
HM	Other subgroup	16	13.3	2.7
	Own subgroup	6	8.7	
LNM	Other subgroup	19	14.9	4.1
	Own subgroup	6	10.1	
LM	Other subgroup	22	17.0	5.0
	Own subgroup	7	12.0	
CNM	Other subgroup	17	11.6	5.4
	Own subgroup	2	7.4	

* These theoretical frequencies indicate the frequency of choice in a given subgroup that would be expected if the choices were made purely at random. Their computation takes into account the number of persons in the two subgroups at each experimental session. No similar correction has been necessary for our communication data because, within the range of variation, the number of persons present made no difference in the pattern of communication.

differentiation (i.e., for the CNM's) is to overchoose persons in the other room. This is to be expected, since most of the friendly and helpful messages in the standard set happened to be designated as coming from one person in the other subgroup. The HNM's also overchoose in this direction. By comparison (although not actually), the HM's underchoose members of the other subgroup, and there is some tendency for the LNM's to do likewise. Thus, there seems to be a slight tendency for the HM's and LNM's to disregard or shun the other level.

TABLE 30.11

CHOICES OF PERSONS TO REPLACE IN EXPERIMENT

Experimental Variation	Distribution of Subjects' Two Choices	Obtained Frequency	Theoretical Frequency *	Amount of Over-Choice in Category ($f_o - f_t$)
HNM	Other subgroup only	6	5.5	.05
	Both subgroups	10	11.6	−1.6
	Own subgroup only	4	2.9	1.1
HM	Other subgroup only	9	7.1	1.9
	Both subgroups	11	12.4	−1.4
	Own subgroup only	2	2.5	−0.5
LNM	Other subgroup only	10	6.4	3.6
	Both subgroups	10	11.3	−1.3
	Own subgroup only	0	2.3	−2.3
LM	Other subgroup only	8	7.6	0.4
	Both subgroups	15	14.3	0.7
	Own subgroup only	2	3.1	−1.1
CNM	Other subgroup only	5	5.6	−0.6
	Both subgroups	9	9.4	0.4
	Own subgroup only	3	2.0	1.0

NOTE.—This table includes only subjects giving the two choices requested in the instructions.
* See footnote, Table 30.10.

In Table 30.11 are presented the selections of persons to eliminate from the group, these having been made at the end of the experiment on the pretext of preparing to do a second task. Here the HM's and LNM's, as compared with the CNM's and HNM's, tend more often to reject persons at the other level by selecting them for elimination from the group.

These findings are supported by several kinds of communication data. In terms of total undifferentiated volume of communication, the HM's and LNM's, as compared with the other variations, send a smaller percentage of their messages to the other subgroup. The messages they do send to the other level tend to be shorter, while those of the other varia-

tions tend to be longer. Neither of these differences is significant, but the fact that they independently follow the same pattern lends considerable support to the emerging conclusion that the HM's and LNM's tend to reject persons at the other level.

More conclusive evidence appears in an analysis of specific types of communication content. We have already summarized in Table 30.9 the percentage of each experimental sample that expressed explicit criticism of persons at the other level. The HM's and LNM's are higher than the other hierarchical variations (the difference being significant at the 6% level) though lower than the Controls. The final relevant data are presented in Table 30.12. Here are summarized communications which

TABLE 30.12

AVERAGE NUMBER OF MESSAGES HAVING COHESIVENESS-BUILDING CONTENT

EXPERIMENTAL VARIATION	DIRECTION OF COMMUNICATION	
	Other Subgroup	Same Subgroup
HNM	1.43	.78
HM	.82	.45
LNM	.72	.64
LM	1.31	.45
CNM	1.63	.63

would be promotive of better interpersonal relations within the total group. This content, which we have termed "cohesiveness-building," includes overtures to friendship, encouragement and praise, and friendly, personal content. The HM's and LNM's clearly send less of this type of content to the other level, the difference between them and the other three variations being significant at the 1% level.

We find quite consistently, then, that the high-mobile and low-nonmobile variations are the ones most destructive of interlevel cohesiveness. We probably need to appeal to different explanations of this effect for the two different variations. It seems likely that the high-mobiles become hostile towards the Lows because the Lows represent a threat to their occupancy of the high-status position (they would presumably be replaced by a person from the Low group). The low-nonmobiles can be expected to be hostile toward persons who occupy the position which they themselves desire but cannot enter. The low-mobiles seemed to be intermediate in amount of hostility toward the other level, presumably being less hostile than the LNM's because of the future possibility that they will share the high position with those presently located there. The CNM's would have little instigation to interpersonal hostility on the basis of

status-related threats or jealousies. They would overchoose persons from the other subgroup simply because of the kind of messages received from there. In the case of the HNM's, they can afford to like a lower-status person since he is in no way a threat to their high position.

In summary, the status variations which are most disruptive of the cohesiveness of the total group are high status combined with the possibility of demotion (HM), and low status combined with the impossibility of promotion (LNM). High status with security of position (HNM) and low status with the possibility of upward locomotion (LM) both operate to develop interlevel friendliness to approximately the same degree as does the nonhierarchic situation (CNM).

These findings may explain some of the results from Thibaut's experiment (6). Within his high- and low-status teams, he distinguished between members who were most central (most chosen by the total group) and those who were most peripheral (least chosen). We might assume that centrality yields a feeling of stability or fixity in the present status position and that, in contrast, peripherality makes the present status position seem more tentative. From our conclusions above, then, we would expect Thibaut's central Lows and peripheral Highs to develop the greatest rejection of the group at the other level, just as our stable Lows and unstable Highs did. Indeed, this proves to be the case. The effect is marked for his variation where the Lows were not allowed to locomote into the high-status position. This would appear to warrant broadening our conclusion to the more general statement that high, unstable status and low, stable status are the conditions most detrimental to the total group's cohesiveness.

Summary

The following conclusions are indicated by the experimental data.

1. The more unpleasant is a position in a hierarchy, the stronger are the forces on a person to communicate task-irrelevant content, this holding true whether the communication is directed to one's own level or to the other level. Irrelevant content is postulated to serve the function of permitting the occupant of an undesirable position to escape from it. Low-nonmobile status is clearly more unpleasant than high-nonmobile status. The combination of low status with upward mobility seems to increase the valence (or decrease the unattractiveness) of the low position, while the addition of downward mobility to high status decreases the valence of the high position.

2. Communication serves as a substitute for real upward locomotion in the case of low-status persons who have little or no possibility of real

locomotion. This was found to hold true only for low-status persons who exhibited some desire to move upward.

3. Restraining forces act upon high-status persons against addressing criticisms of their own job to the lower subgroup and against expressing confusion with their task. We have postulated a general tendency to restrict the transmission of content which would tend to lower the status of one's position in the eyes of others or which would make oneself appear incompetent in the high-status position.

4. The existence of a hierarchy produces restraining forces against communicating criticisms of persons at the other level. High status seems to give persons greater freedom to express whatever criticisms they have of the other level directly to the criticized persons rather than to one's own level.

5. The low-nonmobile and high-mobile conditions are definitely more detrimental to the total group's cohesiveness than are the other status-mobility combinations investigated here. We have explained this in terms of hostility that results from perceiving persons at the other level either as threats to one's own desirable position or as occupants of a coveted but unattainable position.

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Some Effects of Power on the Relations among Group Members

Jacob I. Hurwitz, Alvin F. Zander, and Bernard Hymovitch

Several experimental and field studies have been conducted in recent years to explore the effects of differential positions in power hierarchies upon various types of behavior. Back *et al.* (1), Kelley (2), and Thibaut (5), all found that individual group members occupying low status positions tend to communicate upwards in a hierarchy. The explanation advanced was that individuals who want to improve their status but cannot do so will tend to communicate upwards as a form of substitute locomotion. Lippitt, Polansky and Rosen (3), in a field study of social influence among children, found that those high in attributed power make more frequent attempts to influence the behavior of others than do *lows* and are also more successful in these attempts, whereas *lows* engage in approval-seeking behavior more than do *highs*. And finally Pepitone (4), in his study of motivational effects in social perception, found that under certain conditions of power individuals react with perceptual distortion which is facilitative with respect to their goal achievement, i.e., which represents reality as a better state of affairs than actually exists for them.

These three sets of findings appear to suggest that individuals with relatively little power to influence others behave toward those with relatively more power in an essentially egodefensive manner. This defensiveness probably results from the fact that individuals high in the power hierarchy are generally regarded by other group members as being able to help them achieve some of their goals. The power to influence possessed by the *highs* makes the other group members want to be favorably regarded by them. And since these *highs* can exercise their power so as to

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help or hurt others, they generate a feeling of uneasiness in other group members. Consequently, group members perceive *highs* and behave toward them in ways calculated to reduce this uneasiness.

This study was designed to check the adequacy of these conceptions among members of discussion groups in a controlled situation.

Procedure

The Subjects and Groups

The sample consisted of 42 persons working in the general field of mental hygiene in or near a medium-sized Midwestern city. Forty-eight subjects were selected and agreed to attend, but six of them were unable to attend at the last moment. The subjects were mainly social workers (including executives), teachers, counseling and guidance workers, psychiatrists, psychologists, and nurses. They were selected by two local people, qualified to judge the prestige of these persons in the eyes of fellow professionals. Half of those chosen were high in prestige and half were low. This dichotomization was made in order to maximize the likelihood of getting a reasonably good spread in the independent measure of perceived power to influence.

Perceived power of any individual to influence other members of his group was defined as the extent to which his opinions on a mental hygiene topic would, in their judgment, carry weight with them. Since it was impractical to get such ratings from the participants in advance of setting up the sample, the assumption was made that power to influence was highly correlated with prestige. As it turned out, the subsequent attributed power-to-influence scores (i.e., the mean rating received by each person) conformed to this initial dichotomization for all but three individuals, thus validating the assumption.

The individuals selected (plus several alternates to allow for refusals) were invited to attend a one-day laboratory conference to discuss common and relevant mental hygiene problems and to provide data on interaction among members of different professional groups. The 48 individuals who agreed to attend were divided by a process of reshuffling into 32 six-man groups varying in their distribution by prestige. No two individuals met more than once in any group. Eight of these groups met simultaneously but separately to discuss the same topic. There were four such discussions, hence each subject discussed four separate topics with four wholly different groups.

Since we wished to predict the effects of perceived power to influence upon degree of liking as well as upon perception of being liked, it was essential to control for liking resulting from previous acquaintance. This

was done, within the limits of feasibility in such a field study, by selecting subjects from various professional groups and from different organizations, keeping apart individuals known to have definite previous acquaintance with one another.

The Conference Procedure

The flow of events during the conference was as follows. The subjects were given an orientation session which explained the general purpose of the conference and prepared them for its measurement phase. The structure of the conference, administrative details, and the nature of the measuring instruments were then described. Each subject, with the help of individual directories, rated the 20 individuals with whom he was to meet as to his perception of their power to influence him. All subjects then broke up into their assigned groups to conduct their discussions and furnish the postsession dependent measures. Group observers supervised the completion of the instruments. Lunch and a coffee period broke up the day, and in the final summary session the actual purpose and nature of the research project were candidly revealed and received with lively interest.

The Experimental Task

The experimental task consisted of four discussion topics selected on the basis of the following criteria. They should be (*a*) sufficiently general in content to avoid favoring any professional group by virtue of their particular training or experience; (*b*) sufficiently broad in scope and general in nature to minimize the likelihood of definite previous opinions; (*c*) controversial enough to insure differences in opinion; and (*d*) unidimensional in content to permit ratings along one continuum.

The first problem asked for recommendations concerning the type of agency or institution in the field of mental hygiene to which the subjects would prefer to make a sizable financial contribution—one emphasizing environmental change only, one emphasizing therapy only, or one emphasizing both of these. The second problem dealt with the extent to which recent changes in the role of women have had either helpful or harmful consequence to our society from the point of view of mental hygiene. The third problem had to do with the probable effect (ranging from extremely negative to extremely positive) of greater federal participation in local preventive mental health efforts. The final discussion topic concerned the effect on the mental health of the American people of an effective world-wide scrapping of atomic bombs in the coming year.

Techniques of Measurement

The data for the independent measure of perceived power to influence were obtained by administering a preconference rating form. Each subject indicated by a rating, on a precoded seven-point scale ranging from "not at all" to "extremely much," his perception of the individuals with whom he was to meet with respect to their power to influence his opinions and judgments.

The dependent measures were obtained after each of the subgroup sessions. At the end of the half-hour discussion, each subject indicated the extent of his liking for each of the individuals with whom he had just met, his perception of how much each member liked him, and his perception of the extent of verbal participation of each of them. In all cases ratings were made on precoded seven-point scales ranging from "not at all" to "extremely much." *Liking* was operationally defined as the extent to which an individual would enjoy lunching with the other members of his group on occasions similar to the conference situation. During the discussion, an observer kept a record of the length and frequency of remarks made by each group member, as an objective measure of participation.

These measures permitted a testing of predictions about how perceived power to influence would affect (*a*) degree of liking for other group members; (*b*) degree of distortion in judgments of amount liked by others; (*c*) frequency and direction of communication; and (*d*) degree of distortion in judgments of extent of participation by other group members.

Techniques of Analysis

Since all the assumptions were of a comparative type (e.g., A will be greater than B), mean values were computed for all measures of the dependent variables and the difference between appropriate pairs of means were evaluated by *t*-test or chi-square. In every case *t*-tests were done initially but, when the variances of the paired distributions were found to be significantly different by *F*-test and the *t*-test showed significant differences between means, χ^2 was used since *t*-test was not permissible.

Results

The theoretical conception has been advanced that group members perceive *highs* and behave toward them in an egodefensive manner, i.e., in ways calculated to reduce the feeling of uneasiness they experience in their relations with *highs*. This conception was tested by examining (*a*) the extent to which group members like *highs* and *lows* in their groups; (*b*) degree of distortion in their estimations of how much *highs* and *lows*

like them; and (*c*) frequency and direction of communication among group members.

Degree of Liking for Others

It may reasonably be assumed that individuals who desire to reduce feelings of uneasiness experienced in their relations with *highs* will be ready to like these powerful persons both because of the respect and admiration usually accorded to such people and the need, realistic in these discussion groups, to feel that relations with *highs* are satisfactory and pleasant. From this assumption we may expect that (*a*) *highs* will be liked, on the average, more than *lows*, and (*b*) *highs* will be liked more by *lows* than will *lows* by *highs*.

In Table 32.1 we see that *highs* are rated somewhat higher than are *lows*. There is a marked tendency for *highs* to like *lows* less than they like other *highs*. *Highs* also like *lows* much less than *lows* like *lows*. As expected, *lows* like *highs* considerably more than *highs* like *lows*. In addition, there is a slight tendency for *lows* to rate *highs* higher than they rate *lows* and higher than *highs* rate *highs*. The data thus in varying degree support our theoretical expectations.

TABLE 32.1

MEAN RATINGS OF EXTENT OF LIKING FOR OTHERS

RELATIVE POWER OF		MEAN LIKING
Rater	Person Rated	
1. Low	High	5.53
2. High	High	5.42
3. Low	Low	5.31
4. High	Low	4.85

NOTE.—Significance of differences (p) 1 *vs* 2(<.60), 1 *vs.* 3(<.50), 1 *vs.* 4(<.01), 2 *vs.* 3(<.70), 2 *vs.* 4(<.02), and 3 *vs.* 4(.10).

Distortion in Judgments of Being Liked

We have postulated a desire among group members to be favorably regarded by *highs*. Such a desire should lead to a facilitative overrating by group members of the extent to which they are liked by *highs*.

Table 32.2 reveals a tendency for all subjects to underreport how much others like them. This tendency, however, is much less pronounced when the raters are judging how much *highs* like them (in comparison to *lows*). This is evident when we compare the first two rows with the last two. Comparisons between rows 1 and 3, 2 and 4, and 1 and 4 emphasize this

point. It appears from these data that group members *need* to see the *highs* as liking them and report more that they do. This need is probably enhanced by the marked tendency shown in Table 32.1 for *highs* to underlike *lows*.

TABLE 32.2

MEAN RATINGS OF BEING LIKED BY OTHERS
(Relative to Ratings of Liking Made by Them)

Relative Power of		Mean Rating of Being Liked *
Rater	Person Rated	
1. Low	High	−0.16
2. High	High	−0.66
3. Low	Low	−1.02
4. High	Low	−1.12

NOTE.—Significance of differences (p): 1 *vs.* 2(< 80)†, 1 *vs.* 3(<.01), 1 *vs.* 4(001), 2 *vs.* 3(< 20), 2 *vs* 4(< 05) and 3 *vs.* 4(70).

* *Means* are algebraic means of deviations from actual rating of liking made by person being rated A score of 0 indicates, therefore, that the mean rating of being liked is equal to the corresponding mean rating of liking. Negative values indicate that the individual raters tend to underestimate how much they are liked.

† Chi-square used, resulting in a large increase over the p value obtained by t-test.

If we compare rows 1 and 4 in Table 32.1 with the same rows in Table 32.2, we see that there is a positive relationship between being liked and underreporting of amount liked. This suggests that the more an individual is actually liked by members of his own group, the freer will he be to underestimate the amount of this liking. Conversely, the less he is liked, the greater will be his need to see others as liking him, hence the less free will he be to underestimate this liking. The need of individuals to see *highs* as liking them thus gets added support from the data in Table 32.1.

Table 32.2 suggests that individuals distort facilitatively in an effort to reduce the uneasiness generated in them by *highs*. Whether this distortion is in *reporting* or in *perception*, however, is a question that cannot be answered by our data.

Frequency and Direction of Communication

In group discussion, the uneasiness of *lows* in their relations with *highs* should exert a restraining force on them against communicating as frequently as do *highs*. However, the need of *lows* to be liked by *highs* should induce them, when they do talk, to communicate to *highs* more often than to other *lows*. We should thus expect *highs* both to communicate more frequently than *lows* and to receive more communications than *lows*.

TABLE 32.3

FREQUENCY OF COMMUNICATION AS A FUNCTION OF FREQUENCY OF BEING COMMUNICATED TO

RELATIVE POWER OF		FREQUENCY OF COMMUNICATION
Communicator	Recipient	
	When Recipient Communicates Frequently to Communicator	
1. Low	High	3.61
2. High	High	4.89
3. Low	Low	2.76
4. High	Low	3.66
	When Recipient Communicates Infrequently to Communicator	
5. Low	High	1.14
6. High	High	1.87
7. Low	Low	0.92
8. High	Low	1.63

NOTE.—Significance of differences (p): (a) When only frequency of recipient's communication varies, range of p values is from $<.01$ to $<.001$. (b) When only power of communicator varies, p's range from < 40 to $.05$ (Chi-square used in two comparisons); p's based on t-test range from < 20 to $.01$. (c) When only power of recipient varies, p's range from $<.60$ to $<.05$.

By comparing, in Table 32.3, rows 1 and 5, 2 and 6, etc., (i.e., varying frequency of recipient's communication and holding constant power of communicator and recipient alike), we see that there is a very marked tendency for people to communicate more frequently to those who communicate to them frequently than to those who communicate to them infrequently. Given this response phenomenon, is there any evidence of the influence of power on frequency of communication?

Varying the power of the communicator and holding constant the power of the recipient and the frequency of his communication (i.e., comparing rows 1 and 2, 3 and 4, etc.), we find that *highs* consistently communicate more frequently than do *lows*. And finally, varying only the power of the recipient (i.e., comparing rows 1 and 3, 2 and 4, etc.), we see that *lows* tend to communicate more frequently to *highs* than to other *lows*. And since *highs* do likewise, it is of course not surprising to find that *highs* receive more communications than do *lows*.

Perception of Extent of Participation

Perception of the extent of participation by others carries with it no perceived threat to the rater. Consequently we would not expect to see

in this situation the egodefensive, facilitative distortion which characterizes the judgments of extent of being liked by others. What we might reasonably anticipate, however, is distortion in judgment generated by expectation as to extent of participation of *highs* and *lows*. Let us recall for a moment that people are apparently aware of the restraints on *lows* against communicating in social situations involving individuals of unequal status and of the fact that *lows* are underliked. This awareness may lead people to expect that *lows* should participate relatively little in such situations. Consequently, when *lows* do speak up it should become relatively conspicuous, and the extent of their participation should be exaggerated.

Table 32.4 reveals a tendency for all subjects to overrate the amount others participate in the discussion. When we compare rows 1 and 2 with

TABLE 32.4

MEAN RATINGS OF AMOUNT OF PARTICIPATION BY OTHERS (Relative to Actual Amount of Participation by Them)

RELATIVE POWER OF		MEAN RATING OF AMOUNT OF PARTICIPATION *
Rater	Person Rated	
1. Low	High	+0.23
2. High	High	+0.56
3. Low	Low	+1.38
4. High	Low	+1.42

NOTE —Significance of differences (p): 1 *vs.* 2 (<.20), 1 *vs.* 3 (<.001), 1 *vs.* 4 (<.001) †, 2 *vs.* 3 (<.001), 2 *vs.* 4 (<.001) and 3 *vs.* 4 (<.70).

* *Amount of participation* is defined as frequency of communication weighted by length Means are algebraic means of deviations from observed participation (transformed linearly to a seven-point scale). A score of 0 means, therefore, that the mean rating of participation is equal to the corresponding actual amount of participation. Positive values indicate that the raters tend to overestimate how much others participate.

† Chi-square used.

rows 3 and 4, however, we see that this tendency is much greater when the participation of *lows* is being judged than that of *highs*. This is true whether those making the judgments are *highs* or *lows*. (Compare row 1 with 3, and 2 with 4.) We also see that *lows* overrate *highs* less and other *lows* more than do *highs* with respect to other *highs*. The findings thus consistently support the expectation phenomenon described above.

Discussion

The explanation here advanced for upward communication does not contradict, in our judgment, the one offered by Back *et al.* (1), Kelley (2), and Thibaut (5). Their explanation, that of substitute upward locomotion, applies mainly to those situations having well-defined hierarchical

structures in which individuals in low positions in the hierarchy are strongly motivated to locomote upward in it. In such situations, of course, upward communication probably takes on an egodefensive as well as substitute goal achievement character. It is, however, in the numerous group situations in which the possibility of upward locomotion in a specific hierarchy is smaller, as for example in most informal group situations in which persons are at different status levels but not within the same hierarchy, that the egodefensive explanation we have advanced probably best applies.

Methodologically speaking, this is an experiment in a field situation, not a field study, since we were able to control experimentally the major independent variable by means of selection and assignment of subjects. As such, its chief value lies, perhaps, in that it reveals the same effects of power in a real-life situation previously found by inducing power differences in contrived laboratory situations.

Summary

An experiment was conducted in a field situation to test a number of assumptions based on two theoretical conceptions concerning the effects of power possessed by individuals to influence other members of their groups. The first conception is that group members occupying low status positions will perceive and behave toward high status members in an essentially egodefensive manner, i.e., in ways calculated to reduce the feeling of uneasiness experienced in their relations with *highs*. Thus, for example, due to this uneasiness *lows* will tend to like *highs*, to overrate the extent to which *highs* like them, to communicate infrequently and, when they do talk, to talk mainly to *highs*. The second conception is that awareness by people of the restraints on *lows* against communicating in social situations involving individuals of unequal status, and of their being underliked by other group members, may engender expectations that *lows* should participate relatively little in group discussions. Consequently, when *lows* speak up it becomes conspicuous, and the extent of their participation is exaggerated. No facilitative distortion operates in judgments of extent of participation of other group members (as it does in judgments of extent of being liked) since the amount of participation per se constitutes no threat.

These conceptions are stated in terms of the behavior of individuals of low status. The situation can be viewed equally well from the point of view of persons of high status. *Highs* will behave in essentially the same manner as will *lows*. They will like other *highs*, will want to be liked by them and will talk mainly to other *highs*. However, since they are more secure by virtue of their status than are *lows, highs* will be less threatened

by participation in discussion situations. As a consequence, these tendencies will be less marked than in the case of *lows*. Moreover, because *highs* are less defensive than *lows*, they will feel more free to participate in the discussions. And finally, other members will expect that *highs* should participate actively and hence will make less exaggerated judgments as to the extent of their participation.

The reactions of *lows* and of *highs* to their respective status levels may be summarized by viewing *lows* as recipients of these behaviors. *Lows* will be liked less than *highs* by *highs* and *lows* alike; there will be less of a desire among all group members to be liked by *lows*, and fewer communications will be directed to them. And due to the lower expectations as to the amount *lows* should participate in discussions, the extent of their participation will be exaggerated by *highs* and *lows* alike.

To test these assumptions, a one-day conference was held in a Midwestern city attended by 42 persons working in the field of mental hygiene. These individuals met, each with four different groups, to discuss four topics related to mental health and to provide the necessary measures. The independent measure of perceived power to influence was obtained at the very beginning of the conference. The dependent measures, obtained at the subgroup meetings were as follows: postsession ratings of extent of liking for other group members, perceptions of extent of being liked by them, and perceptions of extent of their verbal participation. During the discussions, observers kept records of frequency and length of remarks as objective measures of participation. Since all the assumptions were of a comparative type, mean values were computed for the dependent measures and differences between appropriate pairs of means were evaluated statistically. The results support the assumptions.

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